**RESOLUTION NO. 4674-25**

**A RESOLUTION OF THE CITY OF OVIEDO, FLORIDA, ADOPTING THE 2025-2030 FLOODPLAIN MANAGEMENT PLAN FOR SEMINOLE COUNTY AND ITS MUNICIPALITIES; AND PROVIDING FOR IMPLEMENTING ADMINISTRATIVE ACTIONS, SCRIVENER'S ERRORS, CONFLICTS, SEVERABILITY, AND AN EFFECTIVE DATE.**

**WHEREAS**, Seminole County and its municipalities are subject to natural hazards such as flooding that threaten life, health, and property; and

**WHEREAS,** the Seminole County Office of Emergency Management developed a Floodplain Management Plan to better understand these hazards, assess their impacts on people and property, and identify effective mitigation strategies. Flood mitigation focuses on reducing long-term risk; and

**WHEREAS,** the Floodplain Management Plan outlines strategies to build resilience against flooding while integrating local and federal resources to support a proactive approach to floodplain management; and

**WHEREAS,** the Flood Management Plan is developed by the Floodplain Management Planning Committee which includes representatives from the County, each of the cities, federal and state agencies, and other stakeholders; and

**WHEREAS,** the City of Oviedo has historically adopted a Comprehensive Emergency Management Plan that incorporates the preparation, response, and recovery efforts to natural and human-made disasters; and

**WHEREAS**, a key component of the City's Emergency Management Plan is the Floodplain Management Plan for Seminole County and its Municipalities; and

**WHEREAS**, a common and anticipated disaster caused by flooding from storm events can result in substantial disruption of utilities, services and transportation; and

**WHEREAS**, where property damage has been identified and mitigation practices incorporated, planning efforts reduce the potential negative impact; and

**WHEREAS,** the City of Oviedo participates with Seminole County and the other cities in Seminole County in implementing a regionalized approach towards disaster response including mitigation techniques; and

**WHEREAS**, the City of Oviedo has participated in the development of the 2025-2030 Floodplain Management Plan for Seminole County and its Municipalities provided in Exhibit 1; and

**WHEREAS**, the adoption of the Floodplain Management Plan also provides credit towards the Community Rating System of the National Floodplain Insurance Program which provides financial insurance savings to the residents; and

**WHEREAS**, the Floodplain Management Plan meets the requirements set forth in 44 Code of Federal Regulations Part 201 which is required for post-disaster funding under the Federal Emergency Management Agency's Hazard Mitigation Grant Program.

**NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF OVIEDO, FLORIDA, AS FOLLOWS:**

**SECTION 1.** Adoption of the Floodplain Management Plan. The City Council hereby adopts the 2025-2030 Floodplain Management Plan for Seminole County and its Municipalities provided in Exhibit 1.

**SECTION 2.** Implementing Administrative Actions. The City Manager is hereby authorized and directed to take such actions as may be deemed necessary and appropriate in order to implement the provisions of this Resolution. The City Manager may, as deemed appropriate, necessary and convenient, delegate the powers of implementation as herein set forth to such City employees as deemed effectual and prudent.

**SECTION 3.** Scrivener's Errors. Typographical errors and other matters of a similar nature that do not affect the intent of this Resolution, as determined by the City Clerk and City Attorney, may be corrected.

**SECTION 4.** Conflicts. All Resolutions or parts of Resolutions in conflict with any of the provisions of this Resolution are hereby repealed.

**SECTION 5.** Severability. If any Section or portion of a Section of this Resolution proves to be invalid, unlawful, or unconstitutional, it shall not be held to invalidate or impair the validity, force, or effect of any other Section or part of this Resolution.

**SECTION 6.** Effective Date. This Resolution shall become effective immediately upon its passage and adoption.

**PASSED AND ADOPTED this 15th day of December 2025.**

**MEGAN SLADEK**
**MAYOR of the City of Oviedo, Florida**

**ATTEST:**

**ELIANNE RIVERA**
**CITY CLERK**

CITY OF OVIEDO FLORIDA SEAL

EXHIBIT 1

# Floodplain Management Plan

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for

Seminole County

And its

Municipalities

SEMINOLE COUNTY

FLORIDA'S NATURAL CHOICE

2025-2030

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# 1 Introduction

**The Problem:** Seminole County, Florida, is subject to natural hazards that threaten life, health, and property. Flooding has historically impacted the county, occurring after major storm events such as Hurricane Irma (2017), Tropical Storm Fay (2008), Hurricane Frances (2004), and Tropical Storm Gabrielle (2001). More recent flooding events include Hurricane Ian (2022), Hurricane Nicole (2022), Hurricane Idalia (2023), Hurricane Helene and Milton (2024). Earlier significant flood events include the 1960 flooding from Hurricane Donna and the 1953 Lake Monroe flood, which resulted from prolonged rainfall over the St. Johns River basin. To better understand these hazards, assess their impacts on people and property, and identify effective mitigation strategies, the County's Office of Emergency Management developed this Floodplain Management Plan (FMP) as an appendix to the County's Local Mitigation and Resiliency Strategy (LMRS).

Flood mitigation does not eliminate all hazards or prevent all damages but instead focuses on reducing long-term risk. As defined by the Federal Emergency Management Agency (FEMA), hazard mitigation refers to "any sustained action taken to reduce or eliminate the long-term risk to life and property from a hazard event." This plan outlines strategies to build resilience against flooding while integrating local and federal resources to support a proactive approach to floodplain management.

Why Plan?

Every community faces unique flood hazards, possesses different resources to mitigate them, and must consider various interests when identifying solutions. There is no single, universal solution to flood hazard management—effective planning provides a structured, **community-specific** approach to mitigating flood risks. A well-developed FMP enables Seminole County to:

- Identify and prioritize comprehensive flood mitigation strategies tailored to local needs.
- Ensure coordination among county departments, municipalities, and stakeholders to avoid conflicting policies and inefficient spending.
- Strengthen the county's eligibility for federal mitigation funding, ensuring the best use of available resources.
- Meet the Community Rating System (CRS) Activity 510 requirements, which contribute to flood insurance discounts for residents by demonstrating a commitment to floodplain management.

This plan provides a framework for collaboration among government agencies, community stakeholders, and private sector partners. It ensures that all possible mitigation activities are reviewed, prioritized, and implemented efficiently, maximizing the effectiveness of flood risk reduction measures.

CRS & FEMA Funding Requirements

Mitigation activities require funding, and a formally adopted mitigation plan is a prerequisite for federal funding opportunities. Section 104 of the Disaster Mitigation Act of 2000 (42 U.S.C. 5164) mandates that, as of November 1, 2003, local governments must have a FEMA-approved Local Mitigation Plan to qualify for hazard mitigation grants. Likewise, as of November 1, 2004,

an approved plan is required for post-disaster funding under FEMA's Hazard Mitigation Grant Program (HMGP). These requirements are outlined in 44 Code of Federal Regulations Part 201.

Beyond fulfilling FEMA funding prerequisites, this Floodplain Management Plan aligns with the CRS program to help reduce flood insurance premiums for Seminole County residents. CRS Activity 510 (Floodplain Management Planning) awards credit to communities that develop a comprehensive flood mitigation plan with public involvement and integration into local policies. By adhering to CRS criteria, this plan enhances Seminole County's ability to:

- Earn CRS credits that contribute to lower National Flood Insurance Program (NFIP) premiums for property owners.
- Demonstrate proactive floodplain management, improving the county's CRS classification.
- Promote public engagement in flood risk awareness and mitigation decision-making.

This Plan

The Seminole County Floodplain Management Plan identifies proactive steps that both public and private sectors can take to reduce safety risks, health hazards, and property damage caused by flooding. This plan serves multiple functions:

1. Satisfies federal mitigation planning requirements, ensuring eligibility for FEMA funding.
2. Aligns with CRS Activity 510, contributing to flood insurance premium reductions for county residents.
3. Provides a strategic blueprint for mitigating the impacts of flooding on people, property, and the environment.

The Floodplain Management Planning Committee (FMPC) played a critical role in developing this plan. The committee included representatives from Seminole County departments, municipalities, federal and state agencies, and other stakeholders to ensure a well-rounded and inclusive planning process.

By adopting and implementing this Floodplain Management Plan, Seminole County strengthens its resilience against flooding while securing financial benefits through FEMA and CRS programs. The plan establishes a long-term vision for flood risk reduction, helping to create a safer and more resilient community for current and future residents.

## 1.1 Planning Approach

This Floodplain Management Plan is the product of a rational thought process that reviews alternatives and selects and designs those that will work best for the situation. This process is an attempt to avoid the need to make quick decisions based on inadequate information. It provides carefully considered directions to the County government by studying the overall damage potential and ensuring that public funds are well spent.

### 1.1.1 Planning Committee

This Floodplain Management Plan was developed under the guidance of the FMPC with oversight from the Office of Emergency Management. To align with Seminole County Administrative Code 4.12: Floodplain Management Planning Committee: The Committee must include designated representatives from County departments, other local, state and federal agencies that serve Seminole County as well as other stakeholders such as private citizens from each of the county's five (5) districts.. The member organizations and participants who were members of this FMPC are shown in Table 4 in section 2.1.1 of this plan. The FMPC met and developed the plan starting in March 2025, to October 2025. Sign-in sheets from these meetings are kept for records by the Office of Emergency Management. The plan included identifying the unique flood risks that affect the County, assessing these flood risks, identifying mitigation actions for these risks, and involving the public in the development of the plan.

Technical support for the development and implementation of the Floodplain Management Plan is provided by the Seminole County Office of Emergency Management and Development Services.

### 1.1.2 Planning Process

The Floodplain Management Planning Committee followed the CRS 10-Step Planning Process, based on the guidance and requirements outlined in the latest CRS Coordinator' s Manual and FEMA regulations. The process is explained in further detail in Chapter 2 - Planning Process

### 1.1.3 Public Involvement

Step 2 of the planning process was to obtain input from the public, particularly residents and businesses that have been affected by natural hazards. The public was invited to participate in the process in the following ways:

- Attending and participating in meetings of the FMPC. Five meetings were held in total. Five (5) members of the FMPC are appointed citizens from each of the Seminole County Commissioner's Districts to promote diverse public involvement.
- Contact with committee members.
- Letters mailed to repetitive loss areas regarding flood awareness, floodplain management planning involvement and potential mitigation opportunities as part of Seminole County's Flood Awareness Week campaign held the first week of March annually, in coordination with the Florida Floodplain Managers Association
- Public meetings held on March 27th, 2025, at the NW Branch Library, the North Branch Library on August 20th, and the Central Branch Library on August 29th to gain public input on the draft plan.

### 1.1.4 Coordination

Existing plans and programs were reviewed during the planning process. During the planning process, contacts were made with a variety of regional, state and federal agencies and organizations. Many of these agencies were members of the FMPC and provided review of and support for this planning effort.

Seminole County also coordinated with representatives from the municipalities in the County, who were invited to participate and attend the FMPC meetings. Citizens representing various areas of the County were members of the FMPC and provided valuable support. At the end of the planning process, these same agencies and organizations reviewed the draft plan and provided feedback.

### 1.1.5 Hazard Assessment and Problem Evaluation

The Committee addressed Steps 4 and 5 of the planning process (Assess the Hazard and Evaluate the Problem) during meetings of the Committee. The Committee's assessment and evaluation of the flood hazard are covered in Chapter 3 of this plan. The FMPC evaluated flooding data, including localized drainage, repetitive loss, hurricanes and tropical storms.

### 1.1.6 Goals

The Committee conducted goal setting exercises at one of its meetings in June of 2025. During this meeting, the group established new goals and aligned goals with the newly established action plan to ensure synchronicity across the Committees intended goal outcomes and our communities risk mitigation actions. .. These goals and objectives are discussed in Chapter 4 of this plan.

### 1.1.7 Mitigation Strategies

The FMPC considered everything that could impact the flood hazards and reviewed a wide range of possible alternatives. They are organized under six general strategies for reaching the goals. These strategies are the subject of Chapters 5 – 10 of this plan.

- Preventive Measures: zoning, building codes and other development regulations
- Property Protection Measures: relocation out of harm's way, retrofitting buildings, etc.
- Natural and Beneficial Functions: preserving natural areas to protect species and habitats or developing in ways that are more protective of species and habitats
- Emergency Services: warning, response, evacuation
- Structural Projects: levees, reservoirs, channel improvements
- Public Information: outreach projects, technical assistance to property owners, and other measures.

### 1.1.8 Action Plan

After reviewing the various alternatives, the Committee drafted an action plan to identify recommended projects, parties responsible for each of the projects, and a schedule for project completion. The action plan is included as an appendix to this plan.

It should be noted that this Plan only serves to recommend mitigation measures. Implementation of these recommendations depends on the adoption of this Plan by the Seminole County Board of County Commissioners.

## 1.2 Topography and Land Use

### Geography and Climate

Seminole County, Florida, encompasses approximately 345 square miles, with 37 square miles consisting of water bodies. The county's topography is relatively flat, featuring gently rolling hills, with elevations ranging from less than five feet to about 130 feet above the North American Vertical Datum of 1988 (NAVD88). The county seat, Sanford, is situated on the southern shore of Lake Monroe in the northern region of the county. Other municipalities include Longwood, Winter Springs, Casselberry, and Altamonte Springs in the southwestern part; Oviedo in the south-central area; and Lake Mary adjacent to Sanford in the western section.

The climate is characterized by long, hot summers and mild, dry winters, with an average annual rainfall of approximately 53 inches. Most precipitation occurs between June and September, often associated with tropical storms or depressions, leading to significant variability in monthly rainfall totals.

### Hydrology

Seminole County is bordered to the north and east by the St. Johns River and primarily to the west by the Wekiva River. The county contains numerous lakes, with over 120 exceeding five acres in size, predominantly located in karst areas on sand ridges. Notable lakes include Lake Monroe along the northern border, Lake Jesup traversing much of the northern half, and Lake Harney along the eastern border.

### Physiographic Regions

The county's landscape consists of alternating ridges and valleys with abundant lakes. According to the USDA's Soil Survey of Seminole County, the primary physiographic regions are:

- **Osceola Plain**: A broad, flat area with elevations between 60 and 70 feet, covering most of the western part of the county.
- **Orlando Ridge**: An area of higher elevation, possibly a relic "Cape Orlando," with its northern tip extending into Seminole County near Altamonte Springs.
- **Eastern Valley**: A broad, flat area at elevations of 20 to 25 feet, through which the St. Johns River flows, encompassing most of the eastern part of the county.
- **Wekiva Plain**: A flat area in western Seminole County dominated by the Wekiva River.
- **Geneva Hill**: A high area within the Eastern Valley near Geneva.

### Geology and Soils

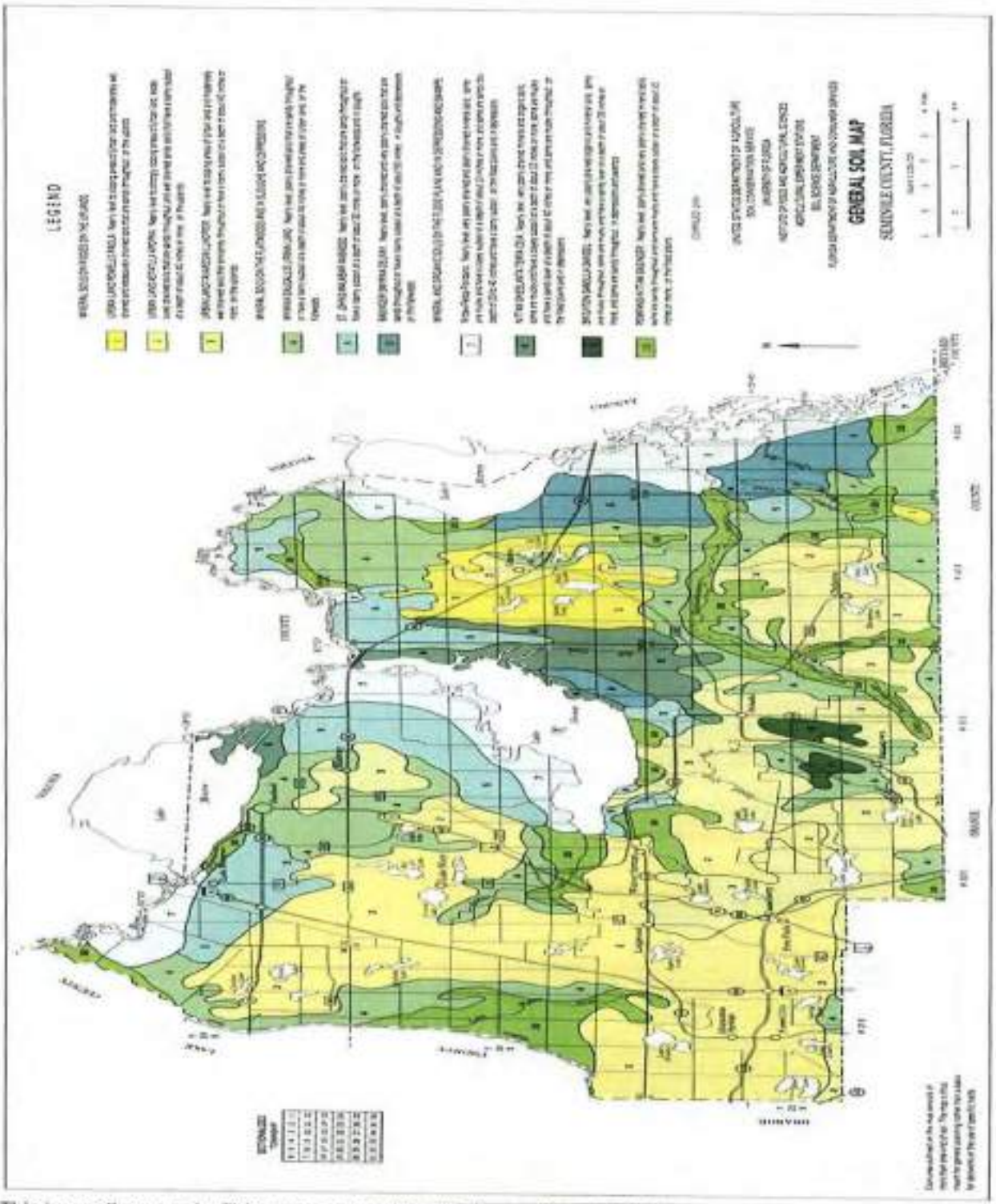
The county is underlain by a thick sequence of limestone and dolomite rock, topped by a relatively thin layer of sand, silt, shell material, and clay. The USDA's Soil Survey identifies ten soil map units in Seminole County:

1. **Urban Land-Pomello-Paola**: Moderately well-drained and excessively drained sandy soils, covering about 4% of the county.
2. **Urban Land-Astatula-Apopka**: Predominantly urban land with excessively drained sandy soils and well-drained soils with a loamy subsoil, covering 22% of the county.
3. **Urban Land-Tavares-Millhopper**: Moderately well-drained sandy soils or those with a loamy subsoil, covering 23% of the county.
4. **Myakka-EauGallie-Urban Land**: Poorly drained sandy soils or those with a loamy subsoil, covering 24% of the county.
5. **St. Johns-Malabar-Wabasso**: Poorly drained sandy soils or those with a loamy subsoil, primarily in the central part of the county, covering 8% of the area.
6. **Basinger-Smyrna-Delray**: Poorly drained and very poorly drained soils, either sandy throughout or with a loamy subsoil, covering about 7% of the county.
7. **Nittaw-Felda-Floridana**: Very poorly drained and poorly drained mineral soils, some with a clayey subsoil and others sandy with a loamy subsoil, found on floodplains and in depressions, covering about 4% of the county.
8. **Nittaw-Okeelanta-Terra Ceia**: Very poorly drained mineral and organic soils, some mucky with a clayey subsoil, others mucky with a sandy layer or mucky throughout, located on floodplains adjacent to Lake Monroe and Lake Jesup, covering about 4% of the county.
9. **Brighton-Samsula-Sanibel**: Very poorly drained organic and mineral soils, some mucky throughout, some mucky with a sandy layer beneath, and some sandy throughout, found in depressions and swamps south of Lake Jesup, covering about 1% of the county.
10. **Pompano-Nittaw-Basinger**: Poorly drained and very poorly drained mineral soils, some sandy throughout and some mucky with a clayey subsoil, located in floodplains adjacent to the Wekiva, St. Johns, and Econlockhatchee Rivers and Lake Jesup, covering about 3% of the county.

### Aquifer

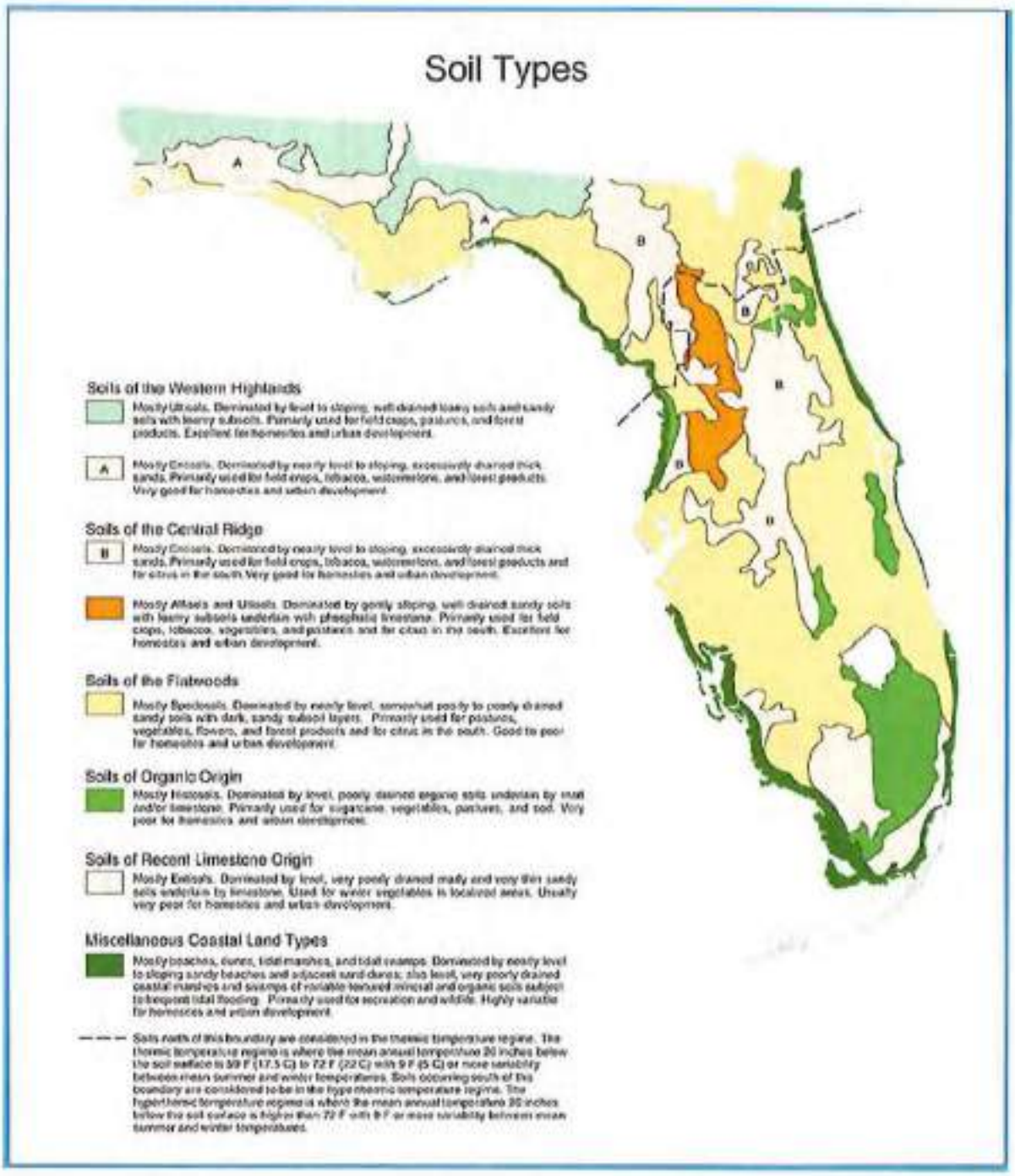
The Floridan Aquifer underlies all of Seminole County and supplies at least 95% of the county's freshwater. While most of the county's soils are sandy and low in natural fertility, they support forests, wildlife, and various agricultural activities, including ornamental plants and vegetables.

**Figure 1: Seminole County Soil Map**




This is a soil map only. This map is not utilized for larger Floodplain Management.

**Figure 1: Florida Soil Types**



## 1.3 Development, Redevelopment and Population Trends

Seminole County's strategic location between Volusia and Orange Counties continues to drive rapid growth, making it one of the fastest-growing counties in Florida. The Seminole County 2024 Comprehensive Plan builds upon previous planning efforts, incorporating updated policies that balance economic development, environmental preservation, and quality of life. The Future Land Use Section outlines key goals and objectives, including:

- **Environmental Protection & Sustainability:** Ensuring the protection and conservation of water resources, air quality, regionally significant natural areas, open spaces, and recreational areas, while integrating climate resilience and sustainability initiatives.
- **Economic Growth & Workforce Development:** Supporting a diverse, globally competitive economy with an emphasis on higher-wage jobs, entrepreneurship, and sustainable industry sectors.
- **Affordable & Diverse Housing Opportunities:** Expanding affordable and workforce housing options, promoting mixed-use developments, and encouraging innovative housing solutions to accommodate population growth.
- **Infrastructure & Transportation:** Enhancing public infrastructure, ensuring adequate public services, and expanding multimodal transportation options, including public transit, bicycle, and pedestrian networks.
- **Community Development & Neighborhood Revitalization:** Preserving established residential neighborhoods, revitalizing declining areas, and fostering new energy-efficient, mixed-use communities that offer educational, healthcare, and cultural amenities.
- **Rural & Agricultural Land Preservation:** Protecting rural and agricultural areas through strategic land use planning and conservation initiatives that maintain Seminole County's natural character.
- **Private Property Rights & Smart Growth:** Ensuring a balanced approach to land use regulations that protect private property rights while promoting responsible development aligned with community goals.

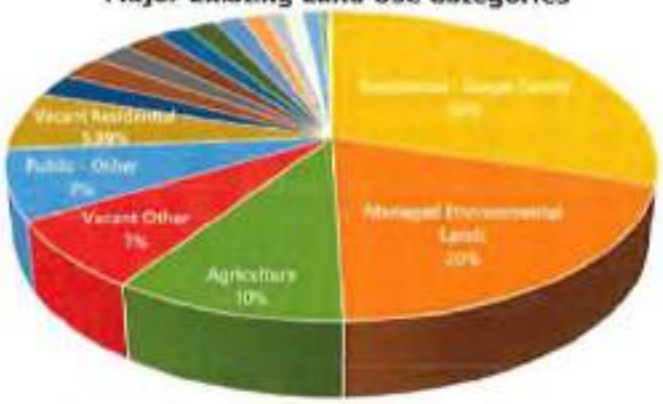
The **Future Land Use Map (FLUM)**, informed by Seminole County's Geographic Information System (GIS) datasets, helps guide development by identifying suitable areas for growth, conservation, and infrastructure investments. The county continues to adapt its planning strategies to address population growth, economic shifts, and environmental challenges while maintaining its commitment to sustainable and responsible development.

There has not been a significant amount of re-development within Seminole County. All development must follow the guidance of the Comprehensive Plan and must comply with all current floodplain management regulations.

**Table 1: Acres of Land-by-Land Use Category**

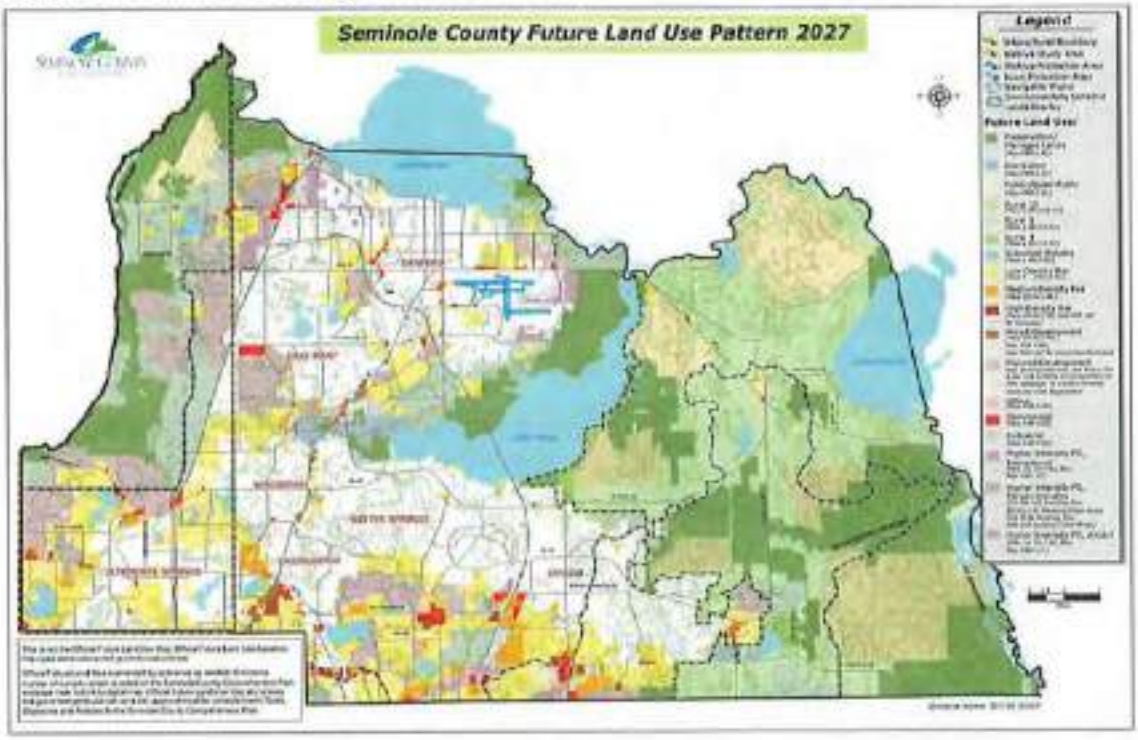
| Existing Land Use Categories | Acres | Percent |
|---|---|---|
| Residential - Single Family | 55,829.50 | 29.71% |
| Managed Environmental Lands | 37,241.61 | 19.82% |
| Agriculture | 18,433.60 | 9.81% |
| Vacant Other | 13,379.04 | 7.12% |
| Public - Other | 13,682.12 | 7.28% |
| Vacant Residential | 11,254.36 | 5.99% |
| Recreational | 4,715.79 | 2.51% |
| Government | 4,665.60 | 2.48% |
| Residential - Multi-Family | 4,347.30 | 2.31% |
| Commercial | 4,013.00 | 2.14% |
| Residential - Mobile Home | 3,552.23 | 1.89% |
| Institutional | 3,427.96 | 1.82% |
| Industrial | 3,067.46 | 1.63% |
| Transportation | 2,779.10 | 1.48% |
| Education | 2,173.47 | 1.16% |
| Office | 1,975.30 | 1.05% |
| Vacant Commercial | 2,008.97 | 1.07% |
| Vacant Industrial | 780.42 | 0.42% |
| Vacant Institutional | 248.55 | 0.13% |
| Dedicated Area | 216.94 | 0.12% |
| Hotels/Motels | 141.93 | 0.08% |
| TOTAL (Includes Incorporated Acres) | 187,934.25 | 100% |

**Major Existing Land Use Categories**




Source: Seminole County Comprehensive Plan

**Figure 2: Seminole County Land Use Pattern**




Source: Seminole County Comprehensive Plan – Future Land Use

### 1.3.1 Population Trends

Seminole County's estimated population is 484,271, reflecting a 2.6% increase from the 2019 estimate of 471,826. According to the University of Florida's Bureau of Economic and Business Research (BEBR), the county's population is projected to continue growing, reaching approximately 510,710 by 2025, an 8.2% increase from 2019. By 2030, the population is expected to rise further to 535,588, representing a 4.9% increase from 2025. These figures account for both the incorporated and unincorporated areas of the county, indicating a steady upward trend in population growth over the coming years.

| Existing Land Use Categories | Acres | Percent |
|---|---|---|
| Residential - Single Family | 55,829.59 | 29.71% |
| Managed Environmental Lands | 37,241.61 | 19.82% |
| Agriculture | 18,433.60 | 9.81% |
| Vacant Other | 13,379.84 | 7.12% |
| Public - Other | 13,552.12 | 7.28% |
| Vacant Residential | 11,254.16 | 5.99% |
| Recreational | 4,715.79 | 2.51% |
| Government | 4,615.60 | 2.46% |
| Residential - Multi-Family | 4,347.10 | 2.31% |
| Commercial | 4,013.00 | 2.14% |
| Residential - Mobile Home | 3,552.23 | 1.89% |
| Institutional | 3,427.96 | 1.82% |
| Industrial | 3,067.46 | 1.63% |
| Transportation | 2,779.10 | 1.48% |
| Education | 2,173.47 | 1.16% |
| Office | 1,975.30 | 1.05% |
| Vacant Commercial | 2,008.97 | 1.07% |
| Vacant Industrial | 780.42 | 0.42% |
| Vacant Institutional | 248.55 | 0.13% |
| Dedicated Area | 216.94 | 0.12% |
| Hotels/Motels | 141.93 | 0.08% |
| TOTAL (Includes Incorporated Acres) | 187,934.25 | 100% |

## 1.4 The Community Rating System

FEMA's National Flood Insurance Program (NFIP) administers the CRS. Under the CRS, flood insurance premiums for properties in participating communities are reduced to reflect the flood protection activities that these communities are implementing. This program can have a major influence on

the design and implementation of flood mitigation activities, so a summary is provided here.

A community receives a CRS classification based on the credit points it receives for activities. It can undertake any mix of activities that reduce flood losses, such as enhanced mapping, regulatory changes, public information programs, flood damage reduction, or flood warning and preparedness programs. There are 10 CRS classes: class 1 requires the most credit points and gives the largest premium reduction; class 10 receives no premium reduction (see Table 2). A community that does not apply for the CRS or that does not obtain the minimum number of credit points is a class 10 community. On May 1, 2011, the County was rated a Class 6 and policy holders within the SFHA enjoy a 20 percent reduction on the cost of flood insurance. This CRS rating was reaffirmed in the 2017 and 2022 cycle verifications

| Class | Points | Premium in Floodplain | Reduction Outside Floodplain |
|---|---|---|---|
| 1 | 4500+ | 45% | 10% |
| 2 | 4,000-4,499 | 40% | 10% |
| 3 | 3,500-3,999 | 35% | 10% |
| 4 | 3,000-3,499 | 30% | 10% |
| 5 | 2,500-2,999 | 25% | 10% |
| 6 | 2,000-2,499 | 20% | 10% |
| 7 | 1,500-1,999 | 15% | 5% |
| 8 | 1,000-1,499 | 10% | 5% |
| 9 | 500-999 | 5% | 5% |
| 10 | 0-499 | 0% | 0% |

**Table 2: Community Rating System Premium Reductions**

### 1.4.1 Program Incentive

The CRS provides an incentive not just to start new mitigation programs, but to sustain them. There are two requirements that encourage a community to implement flood mitigation activities. First, the County will receive CRS credit for this plan, once it is adopted. To retain that credit, the County must submit an evaluation report on progress made towards implementing this plan to FEMA by October 1st of each year. That report must be made available to the media and to the public. Second, the County must annually recertify to FEMA that it is continuing to implement its CRS credited activities. Failure to maintain the same level of involvement in flood protection can result in a loss of CRS credit points and a resulting increase in flood insurance rates to residents.

It is expected that this undesirable impact of loss of CRS credit for failure to report on the plan's progress or for failure to implement flood loss reduction projects will be a strong incentive for the County to continue implementing this plan in dry years when there is less interest in flooding.

### 1.4.2 Benefits of CRS Participation

Table 3 below shows the direct dollar benefit to Seminole County and the County's policy holders for participation in the CRS. The savings per policy are for properties in the FEMA mapped 100-year floodplain ("Special Flood Hazard Area"). The savings are lower for policies outside the mapped floodplain. CRS discounts do not apply to Preferred Risk Policies (PRP), as shown in Table 3 below. The Preferred Risk Policy (PRP) is a Standard Flood Insurance Policy (SFIP) that offers low-cost coverage to owners and tenants of eligible buildings located in the moderate-risk B, C, and X Zones in the National Flood Insurance Program (NFIP) Regular Program communities.

**Table 3: Seminole County Policy Savings for CRS Participation**

| Community Name | CRS Entry Date | Current Effective Date | Current Class | % Premium Discount | Total Annual Savings (Per CRS Community) |
|---|---|---|---|---|---|
| Altamonte Springs | 10/1/1994 | 5/1/2014 | 7 | 15% | $88,511.10 |
| Casselberry | 10/1/2019 | 10/1/2019 | 8 | 10% | $34,814.40 |
| Lake Mary | 10/1/2009 | 4/1/2021 | 5 | 25% | $46,838.50 |
| Longwood | 10/1/1996 | 10/1/2010 | 10 | 0% | - |
| Oviedo | 10/1/2008 | 10/1/2013 | 6 | 20% | $ 115,740.80 |
| Sanford | 10/1/2016 | 10/1/2016 | 7 | 15% | $81,696.60 |
| Seminole County | 10/1/1991 | 5/1/2011 | 6 | 20% | $648,881.20 |
| Winter Springs | 10/1/1993 | 5/1/2013 | 6 | 20% | $122,091.60 |

Source: 2025 NFIP Data. Calculated discount amount based on total annual premium payments.

In addition to the direct financial reward for participation in the CRS, there are many other reasons to participate. The other benefits that are more difficult to measure in dollars include:

1. The activities credited by the CRS provide direct benefits to residents, including:
    - Enhanced public safety,
    - A reduction in damage to property and public infrastructure,
    - Avoidance of economic disruption and losses,
    - Reduction of human suffering, and
    - Protection of the environment.
2. A community's flood programs will be better organized and more formal. Ad hoc activities, such as responding to drainage complaints rather than an inspection program, will be conducted on a sounder, more equitable basis.
3. A community can evaluate the effectiveness of its flood program against a nationally recognized benchmark.
4. Technical assistance in designing and implementing a number of activities is available at no charge from the Insurance Services Office.
5. The public information activities will build a knowledgeable constituency interested in supporting and improving flood protection measures.
6. A community will have an added incentive to maintain its flood programs over the coming years. The fact that the community's CRS status could be affected by the elimination of a flood-related activity or a weakening of the regulatory requirements for

new developments will be considered by the governing board when considering such actions.

7. Every time residents pay their insurance premiums, they are reminded that the community is working to protect them from flood losses, even during dry years.

More information on the Community Rating System can be found at https://www.fema.gov/national-flood-insurance-program-community-rating-system.

## 1.5 References


1. *Community Rating System Coordinator's Manual,* FEMA, 2017.
2. *Example Plans,* FEMA/Community Rating System, 2006.
3. *Getting Started – Building Support for Mitigation Planning,* FEMA, FEMA-386-1, 2002.
4. *Local Multi-Hazard Mitigation Planning Guidance,* FEMA, 2008.
5. *Soil Survey of Seminole County, Florida,* USDA Soil Conservation Service, 1990.
6. University of Florida Institute of Food and Agricultural Sciences (UF/IFAS). *General Soils Map of Florida.* Soil and Water Sciences Department, University of Florida. Available at: https://soils.ifas.ufl.edu/extension/soil-and-water-resources/general-soils-map-of-florida/. Accessed April 28, 2025.
7. *State and Local Plan Interim Criteria under the Disaster Mitigation Act of 2000,* FEMA, 2002.
8. *Florida Population Studies,* College of Liberal Arts and Sciences Bureau of Economic and Business Research, 2020 https://www.bebr.ufl.edu/sites/default/files/Research%20Reports/projections_2025_asrh.pdf
9. *Seminole County Comprehensive Plan,* Seminole County Planning and Development Department, 2018.

# 2 Planning Process

## 2.1 Planning Approach

This Floodplain Management Plan is the product of a rational thought process that reviews alternatives and selects and designs those that will work best for the situation. This process is an attempt to avoid the need to make quick decisions based on inadequate information during an emergency. It provides carefully considered direction to the County government by studying the overall damage potential and ensuring that public funds are well spent. The development of this plan also followed FEMA's CRS 10-Step Planning Process.

### 2.1.1 Planning Committee

This Floodplain Management Plan was developed under the guidance of a Floodplain Management Planning Committee (FMPC) with oversight from the Seminole County Office of Emergency Management. The Committee included representatives from various County departments, other local, state and federal agencies that serve the County, and citizens from throughout the County. Some of these citizen members of the FMPC had been flooded in the past. The County department representatives, citizens and stakeholders who make up the FMPC are shown in Table 4 below.

**Table 4: FMPC – Floodplain Management Planning Committee**

| | |
|---|---|
| Amy Volpe | Citizen District 1a |
| Shannon Webster | Citizen District 1b |
| Jeff Abbot | Citizen District 2 |
| Karen Heriot | Citizen District 3 |
| Daniel O'Keefe | Citizen District 4 |
| Gabrielle Milch | Citizen District 5 |
| April Davis | City of Altamonte Springs |
| Avi Bryan | City of Altamonte Springs |
| Danielle Marshall | City of Altamonte Springs |
| Jare Dal | City of Casselberry |
| Kelly Brock | City of Casselberry |
| Danielle Koury | City of Lake Mary |
| Miguel Conde | City of Lake Mary |
| Eric Nagowski | City of Longwood |
| Shad Smith | City of Longwood |
| Tom Smith | City of Longwood |
| Amanda Kortus | City of Oviedo |
| Chief Michael Woodward | City of Oviedo |
| Prince Bates | City of Sanford |
| Michael Cash | City of Sanford |
| Clete Saunier | City of Winter Springs |
| Terrilyn Rolle | City of Winter Springs |

| | |
|---|---|
| Walt Williams | Seminole County Building Division |
| Tony Coleman | Seminole County Plans Examiner - Building Division |
| Jennifer Goff | Seminole County Development Review / Engineering |
| Vladmir Simonovski | Seminole County Development Review / Engineering |
| Jim Potter | Seminole County Development Review / Engineering |
| Kathryn Valentine | Seminole County OEM Mitigation Manager |
| John Lockwood | Seminole County OEM Mitigation Coordinator |
| Alan Harris | Seminole County OEM Director |
| Owen Reagan | Roads/Stormwater appointed by PW Director |
| Marie Lackey | Seminole County Public Works |
| Lucarelli, Dino | Seminole County Engineering |
| Lucius Cushman | SC Resiliency Committee Citizen |
| Rob Wolf | SC Resiliency Committee Citizen |
| Steven Lerner | Seminole County OEM Division Manager |
| Michelle Bernstein | Citizen |
| Tony Nelson | Engineering Division - Public Works |
| | |

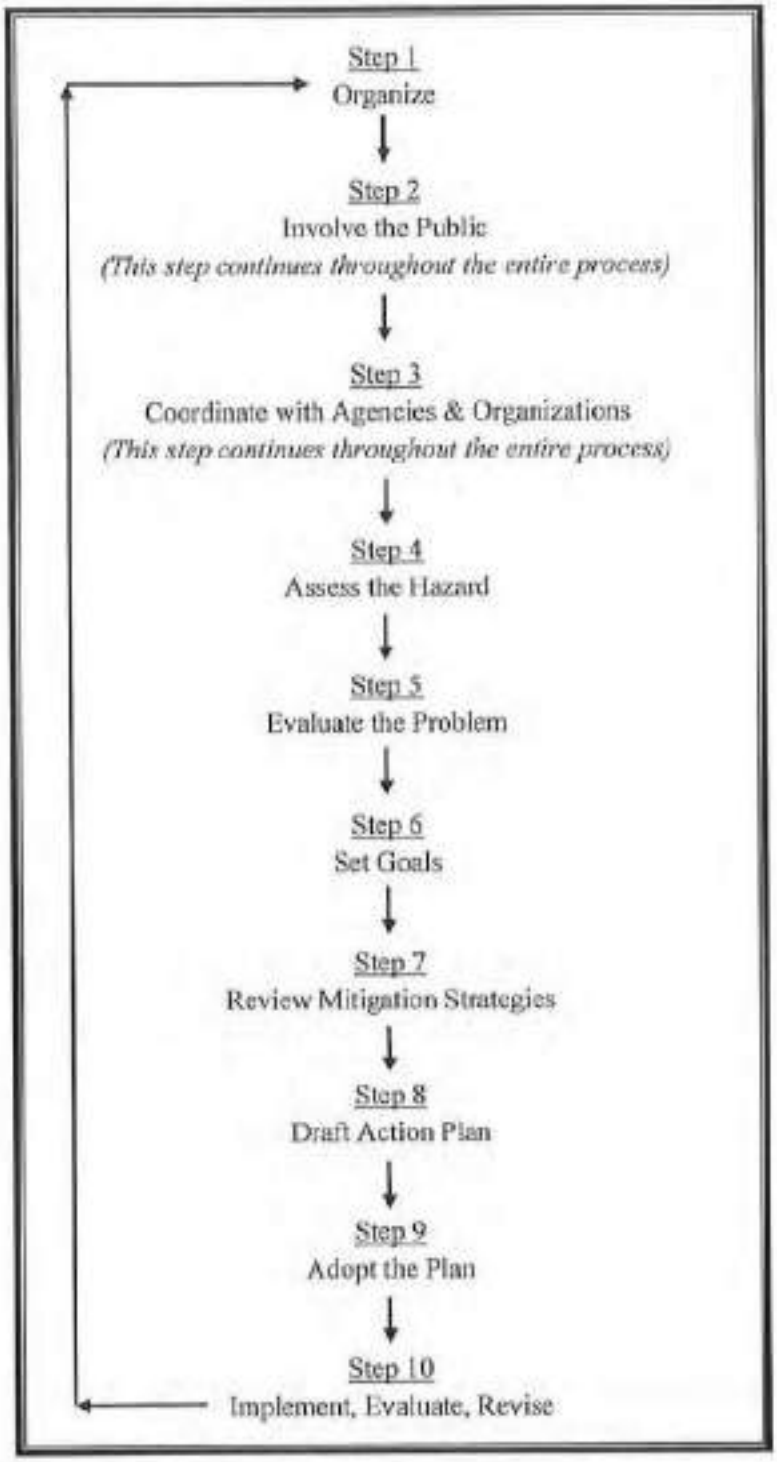
The plan development included identifying the unique flood risks that affect the County, identifying mitigation actions for these risks, and discussing how to involve the public in the development of the Plan.

The Seminole County Board of County Commissioners passed a Resolution amending Administrative Code Section 4.12, which established the planning process and created the FMPC.

## 2.1.2 Planning Process

The FMPC followed a standard 10-step process, based on the guidance and requirements of FEMA. The process is summarized in the flow chart in the figure on the right. The Committee assessed the flood hazards affecting the County, set goals, and reviewed a wide range of activities that can mitigate the adverse effects of the hazards. The FMPC met five times over the course of the planning process in development of this plan. Agendas and sign-in sheets for each of the meetings are documented and saved by the Office of Emergency Management.

**Figure 3: Mitigation Planning Process**



### 2.1.3 Public Involvement

Step 2 of the planning process was to obtain input from the public, particularly residents and businesses that have been affected by natural hazards. The public was invited to participate in the process through the following ways:

- Attending and participating in meetings of the FMPC. Nine (9) meetings were held in total. Five (5) members of the FMPC are appointed citizens from each of the Seminole County Commissioner's Districts to promote diverse public involvement.
- Contact with citizen committee members in each meeting.
- Public meetings held at the beginning and end of the planning process to elicit additional public input from those outside the committee.

#### *2.1.3.1 Public Meetings*

A public Floodplain Management Plan (FMP) meeting was held to kick off the planning cycle on March 27th at the Seminole County Northwest Library Community Room in Lake Mary. The goals of this meeting were to provide background on the FMP, familiarize citizens with the planning process, and discuss the variety of floodplain management resources available in our community. At the conclusion of the meeting, attendees were invited to fill out a public comment form.


Additional public meetings were held at the end of the planning process to solicit feedback on the draft plan. Meetings took place on August 20, 2025, and August 29th, 2025 at the North & Central Branch Library Community Rooms in Sanford and was also conducted virtually as an online option. The meeting was advertised through letters to addresses within the Special Flood Hazard Area, a notice in the local newspaper, postings in County public buildings, and announcements on the Prepare Seminole website, the Seminole County events calendar, and multiple social media platforms.

During the meeting, background on the plan—including its findings and recommendations—was presented. Attendees were provided the opportunity to ask questions and submit comments for review and potential inclusion in the final plan. The committee also summarized how public input received throughout the planning process was considered and integrated into the FMP.

SEMINOLE COUNTY
FLORIDA'S NATURAL CHOICE

# FLOODPLAIN MANAGEMENT PLAN QUESTIONNAIRE

We need your help! Seminole County is working to become less vulnerable to flooding, and your participation is important to us. Seminole County and its municipalities are updating the countywide Floodplain Management Plan. This plan will identify and assess our community's flood risk, determine how best to minimize risks, and identify what outreach materials may be necessary to better communicate these risks.

This survey is an opportunity for you to share your opinions and participate in the mitigation planning process. The information you provide will help us better understand your hazard concerns and can lead to mitigation activities that help lessen the impacts of future flood events.

## BACKGROUND INFORMATION

**1. Where do you live?**

☐ Unincorporated Seminole County ☐ Altamonte Springs ☐ Casselberry ☐ Lake Mary ☐ Longwood ☐ Oviedo ☐ Sanford ☐ Winter Springs

## FLOOD INFORMATION

**2. Have you ever experienced or been impacted by high water or flooding in Seminole County?**

☐ Yes ☐ No

a. **If "Yes", please explain:**

_____

_____

_____

**3. How concerned are you about the possibility of your community being impacted by flooding?**

☐ Extremely Concerned ☐ Somewhat concerned ☐ Not concerned

**4. Is your home located in a Federal Emergency Management Agency (FEMA) designated floodplain?**

☐ Yes ☐ No ☐ I don't know

**5. Do you have flood insurance on your home/ personal property?**

☐ Yes ☐ No ☐ I don't know

a. **If "No", why not?**

☐ My home is not located in a floodplain
☐ I rent
☐ It's too expensive
☐ I don't need it because it never floods
☐ I never really considered it
☐ I don't need it because my home is elevated or otherwise protected

☐ Other (please explain): _____

_____

#### *2.1.3.2 Other Public Involvement Methods*

Seminole County promoted the floodplain management plan through its established Local Mitigation and Resiliency Strategy (LMRS) Committee, which includes members from a cross-section of the community and who represent a variety of local organizations that are key stakeholders of plan.

### 2.1.4 Coordination

Existing plans and programs were reviewed during the planning process. In order to effectively update all parts of the plan, a review was done of the Seminole County and municipal Comprehensive Plans, the Local Mitigation Strategy, the Seminole County Future Land Use plan, National Inventory of Dams, Area Basin Studies, and Geographic Information Systems map data. In addition, contacts were made with regional, state and federal agencies and organizations during the planning process. Requests for updated information were made of a variety of stakeholder agencies, including the National Weather Service, the Florida Division of Emergency Management, and the Insurance Services Office to obtain technical information needed for review and inclusion in the plan.

**Figure 4: Public Comment Adjudication Form**

| Seminole County Floodplain Management Plan Public Comment Adjudication Form | |
|---|---|
| 1. Meeting Information | |
| Committee Meeting Date: | |
| Meeting Location: | |
| Facilitator / Committee Chair: | |
| 2. Comment Details | |
| Comment (or form if provided): | |
| Affiliation / Community (Resident, Business Owner, Organization, etc.): | |
| Comment Submitted via: | |
| 3. Summary of Comment | |
| | |
| 4. Committee Review & Response | |
| Is the Comment Addressed in the Current Plan? | ☐ Yes (please explain where and how in #5)<br>☐ No (Explain why not and whether it should be included in the update) |
| Committee Action Taken: | ☐ Comment incorporated into the plan<br>☐ Additional research needed<br>☐ Already addressed in the plan<br>☐ Not feasible / outside the scope of the plan<br>☐ Other (Explain): |
| 5. Response (or question) (Briefly describe the committee's decision and reasoning.) | |
| | |
| 6. Next Steps / Follow-Up Actions (List any actions to be taken, such as additional analysis, outreach, or plan revisions.) | |
| | |
| Reviewed By (Print / Sign): _____<br>Position / Role: _____<br>Date: _____ | |

Aside from the citizen committee members input, public comments were encouraged at each of the public planning meetings. Each of these comments were considered and discussed during the following committee meeting. The final decision on the public comment by the committee typically fell into one of three categories on the adjudication form seen on **Figure 4.** The form is used to track public comment consideration & implementation into the plan during the update cycle.

#### *2.1.4.1 Solicitation of Comments*

Members of the FMPC included representatives from different areas of the community, including citizen representatives from all five (5) commission districts. These stakeholders provided valuable comments throughout the planning process.

#### *2.1.4.2 Neighboring Communities*

All incorporated municipalities within Seminole County were made aware of the planning process via e-mail and calendar invitation. Each incorporated municipality was invited to attend the FMPC meetings. Participating municipal agencies were involved through the planning process and community profiles are included as appendices to this plan for each of the six participating communities.

#### *2.1.4.3 Contacting Other Agencies and Meetings with Agencies*

Because Seminole County is not a coastal county, the Florida Department of Environmental Protection's Coastal Management Program was not contacted for this planning effort.

### 2.1.5 Hazard Assessment and Problem Evaluation

The Committee addressed Steps 4 and 5 of the planning process (Assess the Hazard and Evaluate the Problem) during the March and July meetings of the FMPC. The flood hazard data and vulnerability to critical facilities, buildings and infrastructure and the impact of the flood hazard on life, health and safety is covered in Chapter 3 of this document. The LMRS also provided data and support for Hazard Assessment and Problem Evaluation sections of the plan.

### 2.1.6 Goals

The Committee reviewed the Floodplain Management Plan Goals at the July FMPC meeting. During this meeting, the list of current goals was reviewed and discussed, and then the Committee agreed upon a final list of goals and objectives. These goals are discussed in Chapter 4 of this document.

### 2.1.7 Mitigation Strategies

During the September meeting of the FMPC, the Committee reviewed and discussed various mitigation measures which could help to reduce or eliminate the flood hazards. The Committee went through a comprehensive list of potential options based on the following six general categories:

- Preventive Measures
- Property Protection Measures
- Natural Resource Protection Measures
- Emergency Services Measures
- Structural Measures
- Public Information Measures

### 2.1.8 Action Plan

After reviewing the various alternatives, the Committee drafted an action plan to identify recommended projects, parties responsible for implementation, a schedule for project completion, and identification of funding sources. The action plan is included as an appendix to this document.

This Floodplain Management Plan serves only to recommend mitigation measures. Implementation of these recommendations depends on adoption of this plan by the Seminole County Board of County Commissioners.

# 3 Flood Risk Assessment

Flooding is the deadliest and most costly storm-related natural hazard in the United States. Many deaths due to flooding can be avoided by not driving through flooded roads and paying attention to evacuation warnings.

### Flood Definition

The U.S. Geological Survey, Water Science School defines a flood as an overflow of water onto land that is normally dry. Floods can occur during heavy rains, when ocean waves come on shore, when snow melts too fast, or when dams or levees break. Floods range in scale, they can be only a few inches of water, or they can cover a house to the rooftop.

A flood inundates a floodplain. Most floods fall into four major categories: riverine flooding, coastal flooding, storm surge and inland flooding. Seminole County is only susceptible to two types of flooding due to its landlocked central Florida positioning and its riverine borders of the St. John's and Wekiva River.

### Flooding of Major Water Bodies in Seminole County

Seminole County's flood vulnerability is driven largely by its riverine hydrology, centered on the St. Johns River, Wekiva River, and Econlockhatchee River systems, each with distinct flood responses shaped by watershed dynamics, topography, land use, and upstream conditions.

### The St. Johns River System

The St. Johns River—Florida's longest river—is a low-gradient, slow-moving river that flows northward and forms Seminole County's eastern and northern boundaries. Its flood behavior is markedly different from flashier systems:

- Hydrologic lag: Rainfall upstream in Brevard, Orange, and Volusia Counties can result in delayed flooding downstream in Seminole County. It may take several days to weeks for high water levels to reach and affect areas like Sanford, Geneva, and river adjacent areas.
- Backwater flooding: During tropical cyclones downstream constrictions or high tides near the river mouth (e.g., Jacksonville) can cause backwater effects, raising water levels upstream in Seminole and prolonging floods.
- Flood stage sensitivity: When the basin is well saturated, even moderate rainfall events can tip the river above flood stage due to the river's limited conveyance and high-water table. Long-standing floods, such as after Hurricane Irma (2017) and Hurricane Ian (2022), were exacerbated by the river's low topographic relief, with water remaining overbank for weeks. Hurricane Ian (2022): Caused the St. Johns River at Lake Harney to remain above flood stage for over 30 days, severely affecting Geneva and adjacent rural neighborhoods.

### The Wekiva River

The Wekiva River is a spring-fed tributary of the St. Johns River, flowing from the Wekiwa Springs basin forming the western boundary of Seminole County. While its baseflow is stable due to its spring source, flooding conditions:

- Result in short-duration overbank flooding, and bank erosion especially at constricted developed areas, bridges or culverts near Altamonte Springs and Longwood.

- Downstream areas can experience compound flooding, where Wekiva River overbanking is combined with backwater flooding from the St. Johns River, as seen during Tropical Storm Fay (2008).

**Econlockhatchee River**

The Econlockhatchee River, primarily affecting southeastern Seminole County and the City of Oviedo, is a rainfall-dependent, rapid-response system:

- With little baseflow and steep tributary slopes in some areas, it reacts quickly to intense thunderstorms.
- Urbanization and wetland loss in the watershed have increased peak runoff and reduced infiltration, heightening flood risk during summer storm events.
- Flooding in this basin tends to be more flash-prone, with shorter duration but higher velocity flows, posing a risk to road crossings, culverts, and adjacent homes.

**Lakes Monroe, Jesup and Harney**

- Lake Monroe, fed by the St. Johns River, serves as a natural flood reservoir but has limited outflow capacity. Prolonged rainfall can raise lake levels to flood adjacent areas of the city of Sanford's waterfront, downtown and older neighborhoods.
- Lake Harney, in the eastern rural Geneva area, similarly lacks significant outflow relief. High inflow combined with backwater from downstream can result in wide floodplain inundation. This flooding primarily impacts homes near the lake, and limits access to residential properties.

**Urban Flooding & Impervious Surfaces**

Beyond major rivers, due to continued urban stormwater flooding has been a growing concern in Seminole County:

- Altamonte Springs and parts of Sanford and Casselberry see localized street and property flooding due to undersized storm drains, loss of natural retention areas, and impervious surface expansion.
- The Little Wekiva River, modified over the years for drainage and development, has lost floodplain storage capacity, leading to frequent nuisance flooding in urbanized corridors.

**Flood History**

Seminole County has a long history of significant flood events impacting its communities. Notably, in 1953, heavy rainfall over the St. Johns River basin caused Lake Monroe to flood the streets of Downtown Sanford, reaching a record crest of 8.51 feet. In 1964, Hurricane Dora brought strong winds and rainfall to the area, resulting in minor damage to 461 homes and eight mobile homes, as well as significant damage to 26 farm buildings and 12 boats.

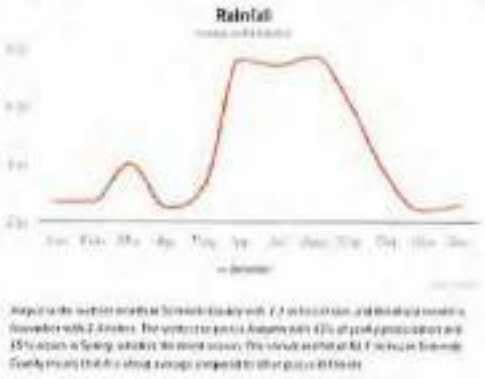
Since 1994, the county has experienced multiple major floods. For instance, Tropical Storm Fay in 2008 caused extensive flooding in east-central Florida, including historic flooding on the St. Johns River, affecting areas in Seminole County such as Sanford and Geneva. Hurricane Irma in 2017 brought tropical storm conditions to the county, with sustained winds reaching 55 mph and gusts up to 75 mph. The storm caused widespread flooding, leading to minor damage in 762 homes, extensive damage in 180 homes, and the demolition of 25 homes, with total damages to businesses and homes estimated at approximately $543.2 million. More recently, in 2022, Hurricane Ian resulted in extensive floods in areas adjacent to the Little Wekiva River in Altamonte Springs, the St. Johns River at Lake Harney and in Sanford, and the branches of the Econlockhatchee River near Oviedo. The storm destroyed two structures, caused major damage to 1,076 structures, and inflicted minor impacts on 580 others, with total damages in Seminole County estimated at about $241 million.

These events have disrupted daily life, closed streets, damaged properties, and, in some cases, resulted in fatalities. In response, Seminole County continues to update and implement its Floodplain Management Plan to address flood control and protection issues, aiming to enhance community resilience against future flooding events.

## 3.1 Precipitation in Seminole County

Seminole County receives an average of approximately 53 inches of rainfall per year, which is higher than the U.S. average of 38 inches. However, this precipitation is not evenly distributed throughout the year. The county experiences a distinct rainy season from June through October, with August typically being the wettest month. Conversely, November tends to be the driest. This seasonal pattern plays a significant role in local flood risk and should be considered in floodplain management efforts.

Figure 5: Seminole County Average Monthly Rainfall




Source: https://www.bestplaces.net/climate/county/fl/seminole, 2025

**Figure 6: Rainfall Distribution across Central Florida**


Source: Radar-Based Rainfall Estimates - Seminole.WaterAtlas.org

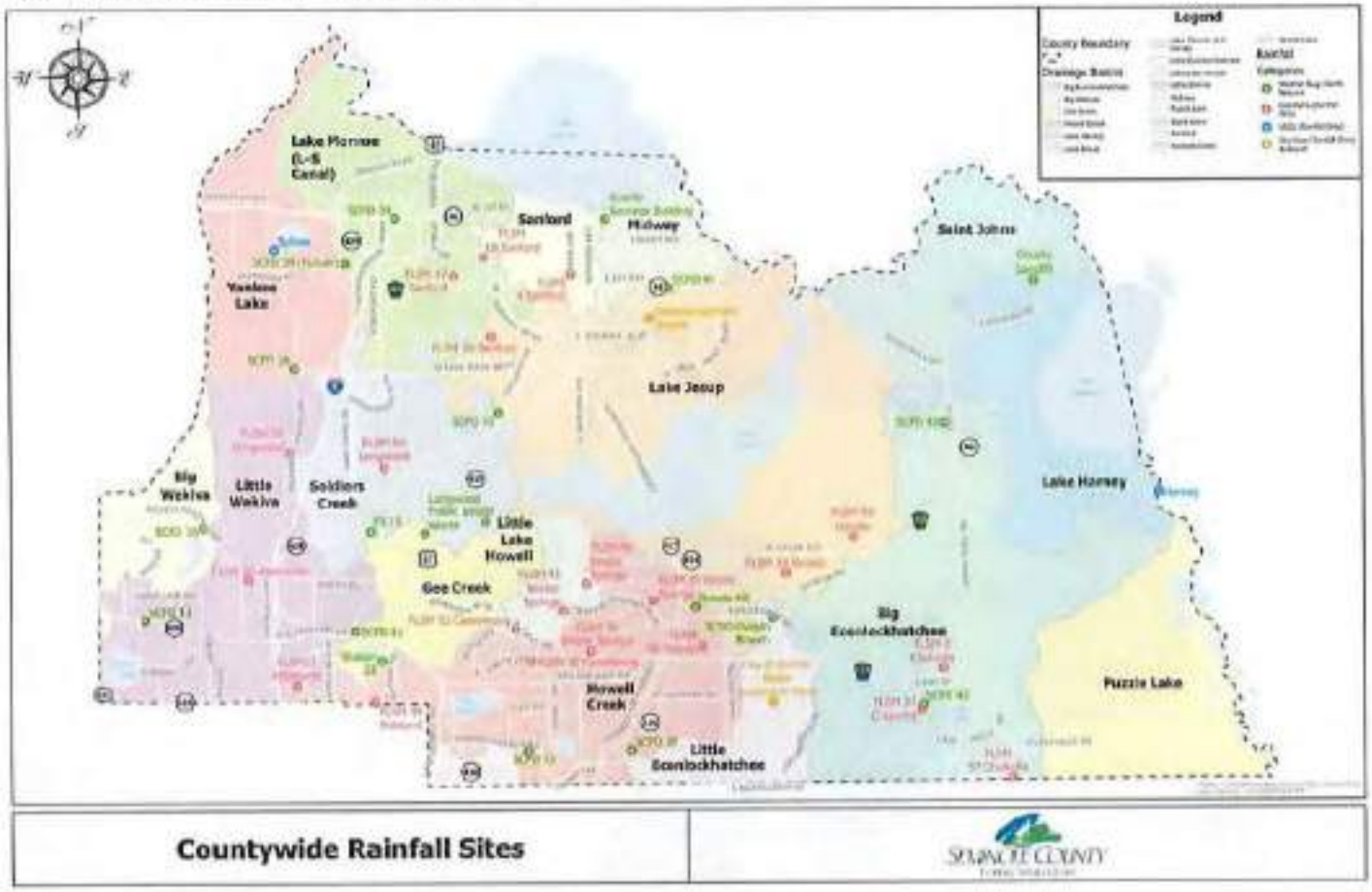
## Precipitation During Large Rain Events

Although local amounts of rainfall may have been greater, these are the record rainfall amounts for the previous large rain events in Seminole County's recent history.

| Storm Name | Date(s) | Maximum Rainfall Observed (Per Event) | Month Average (All-Time) | Month Average (That Year) |
|---|---|---|---|---|
| Hurricane Milton | Oct 9-10, 2024 | 13" (Lake Sylvan) | 3.66" | 9.98" |
| Hurricane Ian | Sep 28–30, 2022 | 16.34" at Fire Station 35 (Five-Points) | 7.68" | 29.69" |
| Hurricane Irma | Sep 10–11, 2017 | 12.46" (Lake Mary) | 7.68" | 23.46" |
| Tropical Storm Fay | Aug 18–24, 2008 | Over 12" | 7.93" | 18.63" |
| Hurricane Frances | Sep 4-6, 2004 | 10.01" (Yankee Lake) | 7.68" | 16.66" |
| Hurricane Charley | Aug 13, 2004 | 4.5" (Little Wekiva) | 7.93" | 13.14" |

Source: Local estimates are based on Seminole County Public Works records using rainfall sites on map below

**Figure 7: Countywide Rainfall Sites**




## 3.2 Seminole County Water Resources and Watersheds

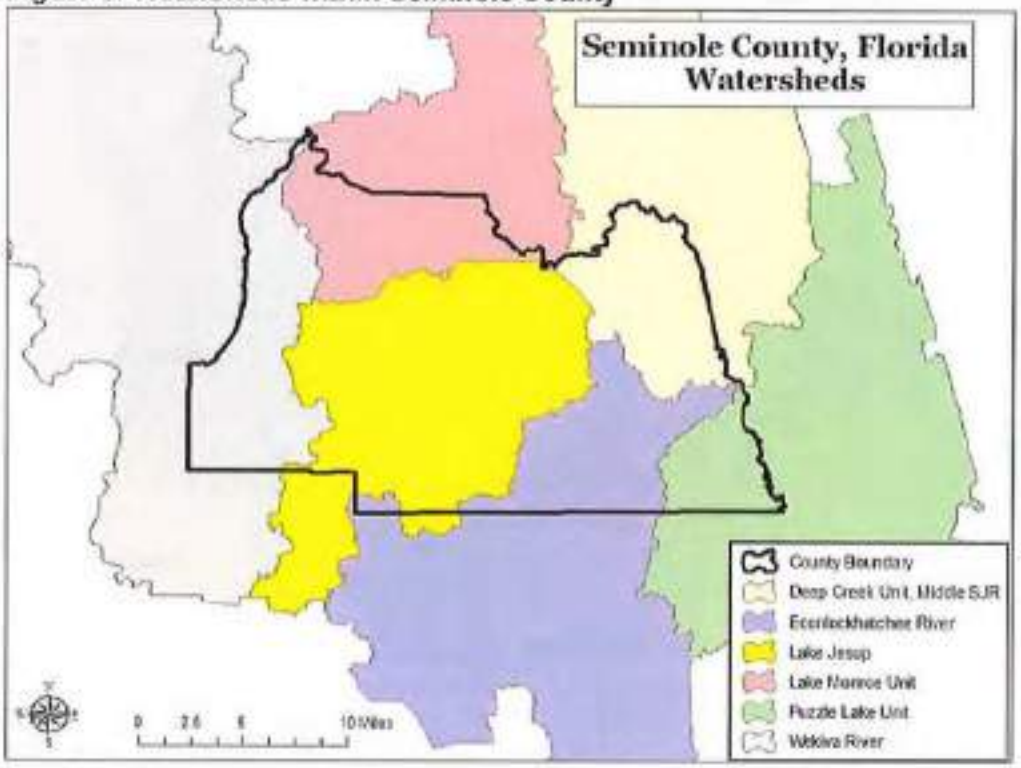
Seminole County has an abundance of surface water resources. The St. Johns River and Econlockhatchee River as well as three large lakes – Lake Monroe, Lake Jesup and Lake Harney – fall at least partly within the County boundaries.

There are also six watersheds that fall partly within Seminole County, as shown in Figure 9. Within these six major watersheds are smaller sub-watersheds that drain into the tributaries. Each of these streams has adjacent floodplains that are inundated during a flood.

The condition of the land in the watershed affects what happens when precipitation falls. For example, more rain will run off the land and into streams if the terrain is steep, if the ground is already saturated from previous rains, if the watershed is significantly covered with impervious pavement and parking lots, or if depressional storage areas (like swamps) have been filled in. Thus, urban development in the watershed can contribute to flooding. Each of the watersheds in Seminole County contains

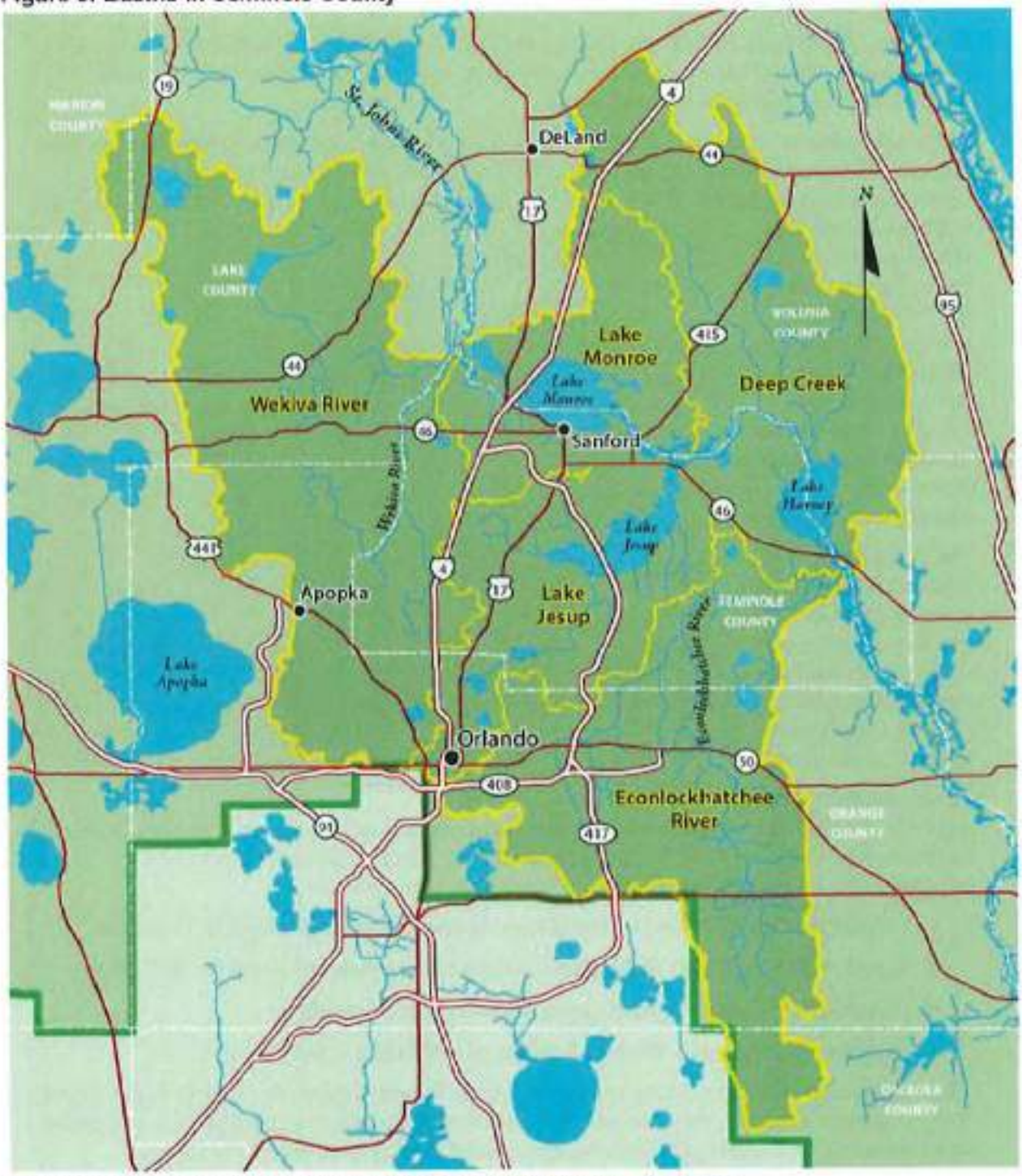
urban as well as rural areas, except for Deep Creek, which is mostly rural. Watersheds that are more urbanized tend to flood more quickly than rural watersheds.

**Figure 8: Watersheds within Seminole County**




Source: Seminole County GIS Division

**Figure 9: Basins in Seminole County**




St. Johns River Water Management District: Middle St. Johns River basin – SJRWMD

**2025 Seminole County Basin Studies**

Seminole County Public Works is studying the East County Drainage Basins with the goal of implementing a cost-effective stormwater program, to minimize flooding and the adverse impacts of uncontrolled stormwater runoff.

A drainage basin is an area of land that collects and channels rainfall and streamflow toward a common outlet, such as a river, lake, or ocean. It includes surface water (streams, lakes, reservoirs, wetlands) as well as the underlying groundwater. Studying these basins, known as a basin study, provides critical information for managing water supply, maintaining water quality, and identifying flood risks. These studies also guide effective flood control solutions and long-term stormwater management strategies.


The East County Basin Studies are divided into three groups: Group A (Soldiers Creek, Gee Creek, and Little Lake Howell), Group B (Howell Creek), and Group C (Lake Jesup)

To achieve this goal, the project is developing a comprehensive watershed management plan that will guide infrastructure improvements, update critical flood data, and identify effective strategies for long-term stormwater management. This process involves several key phases:

- Watershed Data Collection – Hydrology, hydraulics, and infrastructure inventory
- Level of Service (LOS) Evaluation – Assess current drainage system performance
- Floodplain Mapping – Update using modern modeling methods
- Alternatives Analysis – Identify feasible, cost-effective improvements

These basin studies are part of the broader Seminole County Stormwater Master Plan, currently in development. Together, they provide the framework for protecting communities, preserving water resources, and ensuring sustainable stormwater management across the County.

## 3.3 Flood Risks

### 3.3.1 Tropical Cyclones

Flooding in Seminole County is frequently caused by tropical cyclones, including hurricanes, tropical storms, and tropical depressions. These systems bring prolonged heavy rainfall and strong winds that can overwhelm local drainage systems and cause extensive flooding, particularly in low-lying and flood-prone areas. In Seminole County, storms often last several days, increasing the likelihood of sustained and widespread flood conditions. Additionally, high winds and rainfall can generate wave action on the County's major lakes—Lake Monroe, Lake Jesup, and Lake Harney—posing further risk to properties located along these shorelines.

Historically, many hurricanes and tropical storms have passed near or through Seminole County, as shown in Table 5.

**Table 5: Major Storms near Seminole County, Florida (1990 to 2025)**

| Date | Storm Name | Deaths (FL) | Injuries (FL) | Property Damage |
|---|---|---|---|---|
| **10/09/2024** | Hurricane Milton | 6 | 14 (US) | $38 billion (FL) |
| **9/26/2024** | Hurricane Helene | 34 | 117 (US) | $56 billion (FL) |
| **8/30/2023** | Hurricane Idalia | 5 | Hundreds (direct & indirect) | $3.6 billion (FL) |
| **10/10/2022** | Hurricane Nicole | 5 | 0 | $1 billion (FL) |
| **9/28/2022** | Hurricane Ian | 150 (statewide) | Hundreds (direct & indirect) | $122 billion (FL) |
| **9/11/2017** | Hurricane Irma | 7 | Hundreds (direct & indirect) | $50,000,000,000 (US) |
| **10/7/2016** | Hurricane Matthew | 2 | 0 | $10,000,000,000 (US) |
| **8/24/2008** | Tropical Storm Fay | 5 | 0 | $390,000,000 (FL) |
| **2/3/2007** | Severe Storms and Tornadoes | 0 | 0 | $43,000,000 (FL) |
| **8/24/2006** | Hurricane Ernesto | 0 | 0 | $500,000,000 (US) |
| **10/5/2005** | Tropical Storm Tammy | 0 | 0 | <$25,000,000 (US) |
| **9/24/2004** | Hurricane Jeanne | 3 | 0 | $6,900,000,000 (US) |
| **9/16/2004** | Hurricane Ivan | 14 | 0 | $8,300,000,000 (FL) |
| **9/4/2004** | Hurricane Frances | 5 | 0 | $8,000,000,000 (FL) |
| **8/13/2004** | Hurricane Charley and TS Bonnie | 9 | 0 | $14,000,000,000 (FL) |
| **9/3/2003** | Tropical Storm Henri | 0 | 2 | Minor Flooding |
| **9/2/2002** | Tropical Storm Edouard | 0 | 0 | Minor Flooding |
| **9/13/2001** | Tropical Storm Gabrielle | 2 (1 in Seminole) | 0 | $230,000,000 (FL) |
| **10/4/2000** | Tropical Storm Leslie | 3 | 0 | $700,000,000 (FL) |
| **10/20/1999** | Hurricane Irene | 8 | 3 | $8,000,000 (FL) |
| **10/22/1998** | Hurricane Mitch | 2 | 65 | $20,000,000 (FL) |
| **9/15/1998** | Hurricane Georges | 0 | 0 | $20,000,000 (FL) |
| **8/22/1995** | Tropical Storm Jerry | 0 | 0 | $30,000,000 (FL) |
| **7/31/1995** | Hurricane Erin | 0 | 0 | $700,000,000 (FL) |
| **11/8/1994** | Tropical Storm Gordon | 8 | 0 | $400,000,000 (FL) |

Sources: National Oceanic and Atmospheric Administration's National Hurricane Center and the Federal Emergency Management Agency

**Figure 10: Historical Storm Tracks near Seminole County (1852 to 2019)**


Source: NOAA Historical Hurricane Tracks

The trajectory of tropical cyclones plays a critical role in determining the severity of impacts on hurricane-prone communities such as those in Seminole County, Florida. The proximity, orientation, and directional movement of a storm directly influence wind intensity, precipitation totals, and storm surge effects. Analyzing historical storm tracks provides valuable insight into regional vulnerability and informs hazard mitigation planning. Figure 11 illustrates the historical paths of hurricanes and tropical storms that have either directly impacted or passed near Seminole County, highlighting the county's exposure to cyclonic activity over time.

### 3.3.2 Flash Floods

A second source of flooding in Seminole County is flash flooding. Flash floods are generated by severe storms that drop a large amount of rainfall in a short period of time. Flash floods strike

quickly and end quickly, with very little warning time. Areas with steep slopes and narrow stream valleys are particularly vulnerable to flash flooding, as are the banks of small tributary streams. In hilly areas, the high velocity flows and short warning times make flash floods hazardous and destructive.

In urban areas, flash flooding can be triggered by increased stormwater runoff due to land development. When buildings are constructed on open spaces, hard surfaces like parking lots and rooftops replace forests, swamps, fields, and other natural land covers. When rainfall hits these impervious surfaces, it runs off them rather than infiltrating into the soil that was once there. Along the way, stormwater runoff picks up sediment, debris and pollutants on the hard surfaces and carries them to streams or rivers. Thus, developed land absorbs less rainfall than undeveloped land, and increases pollution in local waterways. As we develop land, the amount and speed of storm water runoff increases. As a result, flash floods often occur in urban areas where much of the watershed is covered in impervious surfaces. Development in the floodplain and watersheds of Seminole County could lead to increased flooding problems in the future, if not mitigated.

Table 6 shows the distribution of building permits issued from 2015 to mid-2020. New development such as this can trigger more flash floods. This data comes from the Seminole County Building Division.

Source: Seminole County GIS

### 3.3.3 Dam Failure

Dams are designed to hold back large amounts of water. If they fail or are overtopped, they can produce a dangerous flood situation because of high velocities and large volumes of water released. A break in a dam can occur with little or no warning on clear days when people are not expecting rain or a flood. Breaching often occurs within hours after the first visible signs of dam failure, leaving little time for evacuation.

**Figure 11: Dams in Florida, based on the 2020 National Inventory of Dams**


Dam failures are usually caused either by structural problems with the dam or by hydrologic problems. Structural problems include seepage, erosion, cracking, sliding and overturning resulting from the age of the dam or a lack of maintenance. Hydrologic problems typically occur when there is excessive runoff due to heavy precipitation. For example, a dam failure can occur if the dam must impound more water than it was designed to, or if the spillway capacity is inadequate for water that needs to pass downstream.

A dam can suffer a partial failure or a complete failure, but the potential energy of the water stored behind even a small dam can cause loss of life and great property damage downstream. There are currently no dams located within Seminole County, but there are dams located to the north, west and south of the County.

### 3.3.4 Obstructions

Obstructions can affect a channel, such as small bridge openings or log jams, or they can affect an entire floodplain, such as road embankments, fill and buildings. Channel obstructions will cause smaller, more frequent floods, while floodplain obstructions impact the larger, less frequent floods where most of the flow is overbank, outside the channel. Obstructions can be either natural or manmade and will vary in depth based on the size and type of obstruction. Natural obstructions like log jams can be washed away during larger floods. Manmade obstructions pose a more serious problem, because they tend to be more permanent.

## 3.4 Historical Flooding

Seminole County has experienced several flooding events in the past, caused by heavy rainfall or tropical events.

In 1994, two storms brought heavy rain to most of the Florida peninsula during the last half of September. Rivers and streams overflowed, flooding streets and some urban areas. A flash flood on July 21, 2001, produced by heavy rain inundated the Tuskawilla area of Winter Springs, flooding three homes and causing $15,000 worth of property damage. There has been one recorded death caused by flooding which took place on September 15, 2001. This occurred in the City of Winter Springs during the aftermath of Tropical Storm Gabrielle, which brought wind gusts to around 45 miles per hour, causing minor damage across much of east central Florida. Following the storm, a 15-year-old boy drowned while playing with friends in Gee Creek near Winter Springs after he was pulled underwater by branches and other debris in the fast-moving water. Raising awareness about the danger of currents following heavy rains, as well as the potential for debris in floodwaters, can help prevent similar accidents in the future.

On August 19, 2002, three inches of rapidly falling rain flooded streets and six homes in Sanford. This led to $60,000 of property damage. A thunderstorm brought rainfall and widespread flooding of major roadways in Seminole County on August 29, 2002. The roadway flooding occurred about three miles south of Oviedo. On September 5, 2004, Hurricane Frances brought eight to ten inches of rain across much of Seminole County, flooding homes and streets. Four days later, the rain from Hurricane Frances had caused water levels to reach flood stage in the middle St. Johns River Basin. Levels continued to rise and then fell slightly until Hurricane Jeanne followed the same track across Florida as Hurricane Frances. Significant flooding followed, and the Lake Harney gauge reached a record crest of 10.1 feet. Near Geneva, roads, nurseries and homes along Lake Harney were flooded. Water came over the seawall in Sanford and flooded numerous structures along the south shore of Lake Monroe. The total amount of property damages due to these events was $4.8 million.

Flooding in Seminole County following Tropical Storm Fay in 2008 (photos courtesy Gary Evans, Advantage Consulting LLC)

In 2008, Tropical Storm Fay made four landfalls in Florida. While crossing central Florida, Fay unexpectedly strengthened over land to just under hurricane intensity with 70 mph winds. The storm caused extensive flooding in east central Florida, including historic flooding on the St. Johns River. The rainfall during this period, from August 18th to August 23rd, at its highest reached 17.59 inches with the highest single day being 9.81 inches on August 21st. Approximately 500 homes and many roadways were damaged as the river's water level continued to climb after the storm had passed. Seminole County schools were closed due to impassable roads. The pictures in the box above show floods from Tropical Storm Fay in Seminole County.

In October of 2016, Hurricane Matthew brought minor flooding to the Little Wekiva River and Altamonte Springs area. Although the storm only brought tropical storm force winds to Seminole County, $15,000,000 worth of damage occurred as a result. In September of 2017, Hurricane Irma brought major, near record flooding to the Little Wekiva River and St. John's River at Lake Harney. Moderate flooding also occurred in Sanford along Lake Monroe. Although Seminole County only experienced tropical storm force winds from Hurricane Irma, the flooding that resulted due to heavy rainfall and already saturated lakes and rivers was severe. Overall, property damages from Irma were approximately $543,200,000.

## 2022 Historic Flooding

In recent years, Seminole County has continued to experience frequent and increasingly severe flood events, particularly due to the impacts of tropical systems during hurricane season. These events have placed substantial strain on infrastructure, displaced residents, and underscored the growing vulnerability of flood-prone areas throughout the county.

The 2022 hurricane season marked one of the most devastating flood years in recent memory for Seminole County. In late September, Hurricane Ian swept across the Florida Peninsula, bringing torrential rainfall and prolonged flooding to the region. Historic flood levels were observed along the St. Johns River, Lake Harney, and Lake Jesup, as well as less commonly flooded suburban areas in Sanford, and Altamonte Springs. Due to the slow-moving nature of the St. John's River, and its interconnected water bodies, waters remained above flood stage for weeks in areas adjacent to Lake Harney, Lake Jesup, Lake Monroe and the greater St. John's River Region. More than 1,000 homes were affected by floodwaters, and road closures, infrastructure failures, and prolonged power outages exacerbated the impacts. The storm left behind an estimated $340 million in countywide damages, with flooding identified as the primary hazard.

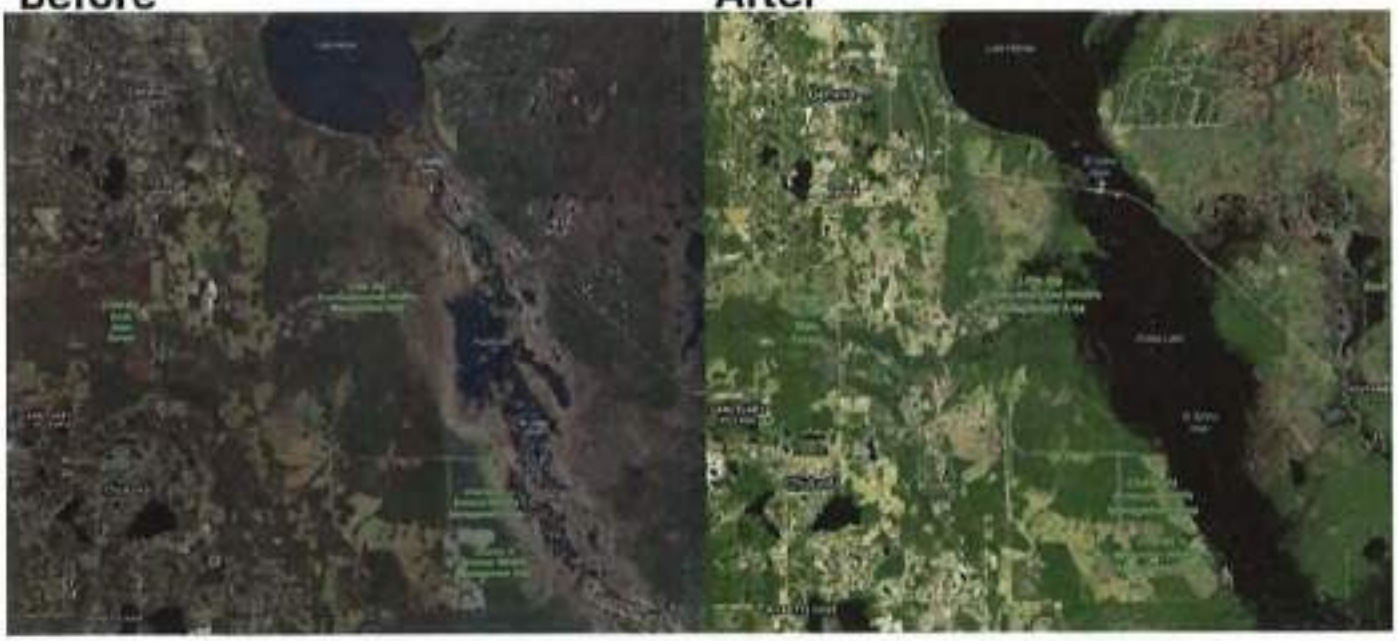
Just weeks later, in early November 2022, Hurricane Nicole struck the region while residents were s till in recovery. Though weaker than Ian, Nicole brought additional rainfall and elevated water levels to already

saturated floodplains. Rivers and lakes that had not yet fully receded overflowed again, contributing to secondary and prolonged flooding in low-lying and previously impacted areas. The compounding effect of back-to-back storms reinforced the challenges Seminole County faces from cumulative and prolonged flood exposure.

The due to the widespread flooding across Central Florida, St. John's based riverine flooding lasted over 40 days in some areas of the county. Satellite photos are pictured below displaying the county on a typical day, and during the 2022 major flood event.

**Before** **After**

**Before** **After**



In August 2023, Hurricane Idalia tracked west of Seminole County but still brought tropical storm-force conditions to the area. Although rainfall totals were moderate compared to Ian, localized flooding occurred due to short-duration, high-intensity rainfall. Drainage systems already stressed by previous seasons saw backups, particularly in urbanized corridors of Altamonte Springs and Casselberry. While damages were more limited, the event once again demonstrated the County's sensitivity to even peripheral impacts from tropical systems.

In fall 2024, Hurricane Helene passed offshore but contributed to widespread rainfall and minor flooding, primarily through elevated lake and river levels. The real concern, however, came in early October with Hurricane Milton. Though not a direct landfall, Milton's outer bands delivered a persistent rain event that saturated the basin feeding into the St. Johns River. Days of steady precipitation caused the river to swell and crest above flood stage, leading to repeat flooding in Geneva, Midway, and along Lake Jesup's western shoreline. Standing water remained in some neighborhoods for over a week, again disrupting access to homes and emergency routes.

**Table 7: Historical occurrences of floods in the County**

| Location | Date | Time | Type | Deaths | Injuries | Property Damages |
|---|---|---|---|---|---|---|
| Florida | 9/15/1994 | NA | Flooding | 0 | 0 | $500,000 |
| Winter Springs | 7/21/2001 | 5:00 PM | Flash Flood | 0 | 0 | $15,000 |
| Winter springs | 9/15/2001 | 1:00 PM | Urban/Small Stream Flood | 1 | 0 | $0 |
| Sanford | 8/19/2002 | 4:45 PM | Flash Flood | 0 | 0 | $60,000 |
| Oviedo | 8/29/2002 | 4:38 PM | Flash Flood | 0 | 0 | $0 |
| Seminole County | 9/5/2004 | 1:30 AM | Flash Flood | 0 | 0 | $0 |
| Geneva and Sanford | 9/9/2004 | 7:00 AM | Flooding | 0 | 0 | $4,800,000 |
| Seminole County | 9/23/2014 | 5:00 PM | Heavy Rain | 0 | 0 | $0 |
| Altamonte Springs | 6/30/2016 | 5:30PM | Flooding | 0 | 0 | $10,000 |
| Seminole County | 10/7/2016 | 3:00AM | Flooding | 1 | 0 | $15,000,000 |
| Seminole County | 9/10/2017 | 9:00PM | Flooding | 0 | 0 | $543,200,000 |
| Seminole County (Lake Charm) | 07/20/2021 | 7:30PM | Heavy Rain | 0 | 0 | $0 |
| Seminole County (Sanford) | 09/19/2021 | 4:15PM | Flash Flood | 0 | 0 | $0 |
| Seminole County (Bear Lake) | 09/28/2022 | 2:00PM | Flooding | 0 | 0 | $241,000,000 |
| Seminole County (Lake Monroe) | 11/08/2022 | 12:00PM | Flooding | 0 | 0 | $0 |
| Seminole County (Chuluota) | 10/09/2024 | 1:00PM | Flooding | 0 | 0 | $27,000,000 |

Source: National Oceanic and Atmospheric Administration's National Environmental Satellite, Data, and Information Service

## 3.5 Locally Identified Flood Areas

While the National Flood Insurance Program (NFIP) provides mapped floodplain boundaries, actual flooding events in Seminole County have demonstrated that floodwaters can extend beyond these designated areas. Factors contributing to this include natural processes like erosion and sedimentation, as well as human activities such as development that increases impervious surfaces, leading to altered drainage patterns and potential debris blockages.

Recognizing these challenges, Seminole County has undertaken comprehensive basin studies to reassess flood risks across the region. These studies have revealed that the number of properties at risk during a 100-year flood event is higher than previously estimated. For instance, in the Wekiva Basin alone, approximately 3,386 new parcels are projected to be added to the floodplain

designation, while 595 parcels may be removed based on updated assessments. This indicates a significant increase in the number of properties susceptible to flooding countywide.

Seminole County's terrain, much of the undeveloped areas can be characterized by wooded areas and extensive marshlands, plays a crucial role in its flood dynamics. These natural features often receive overflow from major water bodies such as Lake Monroe, Lake Harney, Lake Jesup, and the St. Johns River. The interconnectedness of these water systems means that flooding in one area can have cascading effects elsewhere in the county.

## 3.6 The National Flood Insurance Program

In 1968, Congress created the National Flood Insurance Program (NFIP), which enables property owners in participating communities to purchase insurance from the federal government against losses due to flooding. The program is designed as an alternative to disaster assistance. Participation in the NFIP is based on an agreement between local governments and the NFIP that the local government will adopt and enforce a floodplain management ordinance to reduce future flood risks to new construction in Special Flood Hazard Areas, while the federal government will make flood insurance available within the community.

More properties are insured for flood damages under NFIP in Florida than in any other state. Seminole County participates in the NFIP, which means that NFIP flood insurance is available to residents living anywhere in the unincorporated area. According to the NFIP, in unincorporated Seminole County there were 4,031 NFIP flood insurance policies in effect, for a total of $1,225,662,000 in insurance, as of March 31st, 2025.

**Table 8: Seminole County NFIP Polices by Jurisdiction**

| Community Name (Number) | Policies in Force | Total Coverage | Total Written Premium + FPF | Total Annual Payment |
|---|---|---|---|---|
| ALTAMONTE SPRINGS | 854 | $189,679,200 | $475,985 | $590,074 |
| CASSELBERRY | 359 | $91,031,400 | $285,605 | $348,144 |
| LAKE MARY | 225 | $75,498,000 | $148,183 | $187,354 |
| LONGWOOD | 212 | $69,536,000 | $153,053 | $193,563 |
| OVIEDO | 738 | $240,483,400 | $469,000 | $578,704 |
| SANFORD | 635 | $174,076,600 | $431,793 | $544,644 |
| UNINCORPORATED | 4,031 | $1,255,662,000 | $2,626,890 | $3,244,406 |
| WINTER SPRINGS | 640 | $191,974,600 | $503,580 | $610,458 |

## 3.7 National Flood Insurance Program Future Flood Risk

Flooding can occur along all waterways in Seminole County, including the St. Johns River, Lake Monroe, Lake Harney Lake Jesup, and the confluence of the Little Econ and Econlockhatchee rivers. Because there are numerous surface water bodies throughout the County, many locations in the County may be subject to flooding. Areas identified as vulnerable to flooding are depicted on FEMA's Flood Insurance Rate Maps (FIRMs), which are developed through the NFIP and are the official floodplain maps for Seminole County. Many of the County's floodplain management regulations are based on the floodplain limits shown in these maps. It is important to realize that on an annual basis more than 30 percent of all flood losses occur outside any mapped floodplain.



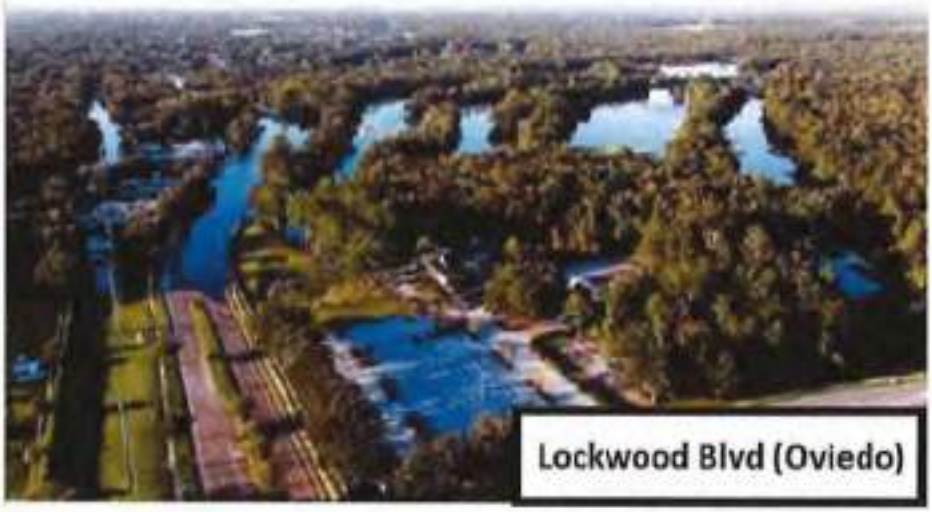
Econlockhatchee River flooding from Hurricane Ian

**Table 9: Flood Recurrence Interval**

| Time Period | Chance of Flooding over a Period of Years | | | |
|---|---|---|---|---|
| | Flood Size | | | |
| 1 Year | 10% | 4% | 2% | 1% |
| 10 Years | 65% | 34% | 18% | 10% |
| 20 Years | 88% | 56% | 33% | 18% |
| 30 Years | 96% | 71% | 45% | 26% |
| 50 Years | 99% | 87% | 64% | 39% |

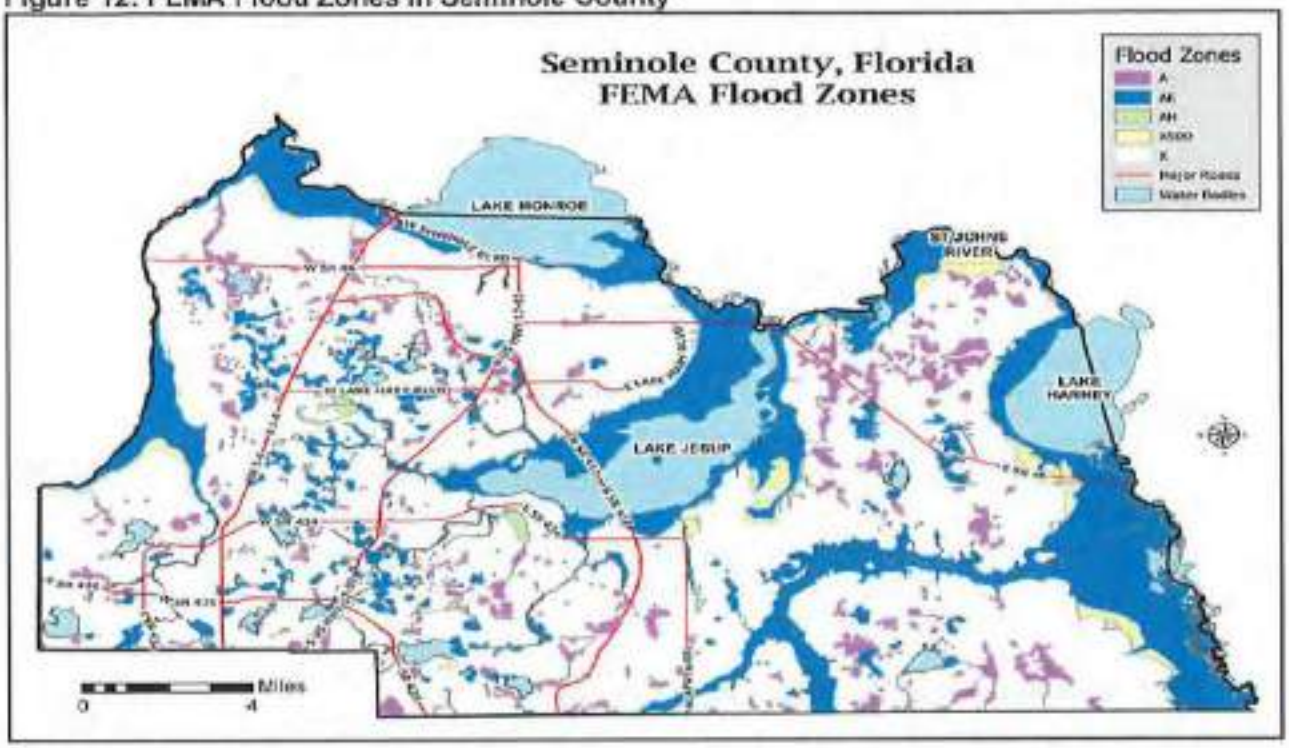
FEMA's flood zones represent the areas of risk for flooding. These zones are based on the statistical risk of future flooding, which is extrapolated from historical records to determine the statistical potential that storms and floods of a certain magnitude will recur. Such events are measured by their "recurrence interval," i.e., a 10-year storm or a 50-year flood. A 10-year storm means that there is a 1 in 10 chance, or 10% chance, of that storm occurring in any given year. A 50-year flood has a 1 in 50 chance, or 2% chance, of occurring in any given year. Because these identifiers are based on statistics, such a flood could occur twice in one year, or could not occur at all over the course of 100 years.

The map below shows flood zone areas within Seminole County. Areas marked as Zone A have a 1% annual chance of flooding, which translates to a 26% chance of flooding over the life of a 30-year mortgage. This area is the base flood for Seminole County. Detailed analyses are not performed for Zone A, thus flooding depths and base flood elevations are not shown for Zone A areas. Zone AE areas have a 1% annual chance of flooding. These have been determined using detailed methods, thus base flood elevations – the level to which flood waters are expected to rise – are available in these areas. Zone AH are areas subject to 1% annual chance flooding, usually as ponding, with average depths between one and three feet.




Areas in yellow have a moderate flood hazard. These are places susceptible to a 0.2% annual chance of flooding. Zone X shows areas where flood hazards are minimal and have a less than 0.2% annual chance of flooding.

Figure 12: FEMA Flood Zones in Seminole County




Source: Seminole County GIS

## 3.8 Flood Impacts

The impacts of floods affect people, buildings, and the economy. These impacts are discussed in this section.

### 3.8.1 Safety

Floods can be extremely dangerous, and even six inches of moving water can knock over a person given a strong current. A car will float in less than two feet of moving water and can be swept downstream into deeper waters. This is one reason floods kill more people trapped in vehicles than anywhere else. During a flood, people can also suffer heart attacks or electrocution due to electrical equipment short outs.

### 3.8.2 Health

While such problems are often not reported, three general types of health hazards accompany floods. The first comes from the water itself. Floodwaters carry anything that was on the ground that the upstream runoff picked up, including dirt, oil, animal waste, and lawn, farm and industrial chemicals. Pastures and areas where cattle and hogs are kept, or their wastes are stored can contribute polluted waters to the receiving streams.

Floodwaters also saturate the ground, which leads to infiltration into sanitary sewer lines. When wastewater treatment plants are flooded, there is nowhere for the sewage to flow. Infiltration and

lack of treatment can lead to overloaded sewer lines that can back up into low-lying areas and homes. Even when it is diluted by flood waters, raw sewage can be a breeding ground for bacteria such as E.coli and other disease-causing agents. If a water system loses pressure, a boil water order may be issued to protect people and animals from contaminated water.

The second type of health problem arises after most of the water has gone. Stagnant pools can become breeding grounds for mosquitoes, and wet areas of a building that have not been properly cleaned breed mold and mildew. A building that is not thoroughly cleaned becomes a health hazard, especially for small children and elderly individuals.

Another health hazard occurs when heating ducts in a forced air system are not properly cleaned after inundation. When the furnace or air conditioner is turned on, the sediments left in the ducts are circulated throughout the building and breathed in by the occupants.

The third problem is the long-term psychological impact of having been through a flood and seeing one's home damaged and irreplaceable keepsakes destroyed. The cost and labor needed to repair a flood-damaged home puts a severe strain on people, especially the unprepared and uninsured. There is also a long-term problem for those who know that their homes can be flooded again. The resulting stress on floodplain residents takes its toll in the form of aggravated physical and mental health problems.

### 3.8.3 Evacuation of Residents and Visitors

A key evacuation and safety concern is when roads and bridges go under water. Generally, the larger the road, the less likely it is to flood, but this is not always the case. In addition, a bridge does not have to be under water to be damaged or to cut off an evacuation route. In some cases, the bridge is high, but the access road may be flooded. In other cases, the bridge or culvert can be washed out. This is especially dangerous if a person drives on a flooded road and assumes that the bridge is still there.

Residents and visitors within Seminole County should be made aware of evacuation routes. It is important that the County work with both public and private entities to ensure that everyone knows which roads and thoroughfares are designated for evacuation. The Office of Emergency Management may use the Integrated Public Alert and Warning System (IPAWS) to alert residents and visitors to voluntary and mandatory evacuations. For local flood concerns, the opt-in Alert Seminole system will be used to notify residents who are at risk of flooding. Below is a map from the Florida Division of Emergency Management which indicates the designated evacuation routes for Seminole County.

| Storm Name | Date(s) of Evacuation Order | Executive Order Number |
|---|---|---|
| Hurricane Ian | September 23, 2022 | Executive Order 2022-002 |
| Hurricane Milton | October 6, 2024 | Executive Order 2024-008 |


**Figure 13: Evacuation Routes for Seminole County**
Source: floridadisaster.org/knowyourzone

### 3.8.4 Critical Facilities

Seminole County's Floodplain Management Planning Committee utilizes a comprehensive inventory of critical facilities located within the county, including essential public facilities, transportation lifelines (roads and bridges), healthcare facilities, utilities, and infrastructure essential to public safety and economic continuity. This list is

The Seminole County Office of Emergency Management maintains and annually updates a countywide Critical infrastructure list to include facilities. This list is categorized according to the U.S. Department of Homeland Security's (DHS) 16 Critical Infrastructure Sectors and can be delineated by jurisdictional boundaries.

### 3.8.5 Building Damage

In coordination with the Local Mitigation Resiliency Strategy (LMRS) and the Resiliency Working Group, these facilities are often evaluated for vulnerabilities and potential mitigation opportunities. If recommended for mitigation improvements, the project would then be scored and placed on the county-wide LMRS Project Priority List. Special emphasis is placed on critical facilities that must remain operational during flood events, such as emergency shelters, hospitals, and utility control centers

Floods can cause severe damage to buildings, which can be costly to repair. Although flood insurance can help pay for repairs to buildings damaged by floods, not all property owners obtain

insurance. Moreover, preventing damage to buildings is less costly, less disruptive, and less dangerous than sustaining damage.

In a few situations, deep or fast-moving waters will push a building off its foundation, but this is rare. More frequently, structural damage is caused by the weight of standing water, known as "hydrostatic pressure." Basement walls and floors are particularly susceptible to damage by hydrostatic pressure. Not only is the water acting on basement walls deeper, but a basement is also subject to the combined weight of water and saturated earth. In addition, water in the ground underneath a flooded building will seek its own level, resulting in uplift forces that can break a concrete basement floor.

The most common type of property damage inflicted by a flood is soaking. When soaked, many materials change their composition or shape. Wet wood will swell and, if dried too quickly, will crack, split or warp. Plywood can fall apart. Drywall will fall apart if it is bumped before it dries. The longer these materials remain wet, the more moisture, sediment and pollutants they will absorb.

Soaking can cause extensive damage to household goods. Wooden furniture may become so badly warped that it cannot be used. Other furnishings, such as upholstery, carpeting, mattresses, and books, are usually not worth drying out and restoring. Electrical appliances and gasoline engines will not work safely until they are professionally cleaned and dried. While a building may appear sound and unharmed after a flood, the water may have caused a lot of damage. To properly clean a flooded building, the walls and floors should be stripped, cleaned and allowed to dry before being recovered. This can take weeks and is a costly process.

Flood insurance claims figures do not include those items that are not covered by a flood insurance policy, like cars and landscaping, or the value of family heirlooms. They also do not include damages to uninsured or underinsured properties.

Table 10 below shows the appraised value of all buildings in unincorporated Seminole County by FEMA flood zone. All the buildings in these zones are at risk of flood damage.

**Table 10: Appraised Value of Buildings in Unincorporated Seminole County by Flood Zone**

| | A | | AE | | AH | | X/X500 | |
|---|---|---|---|---|---|---|---|---|
| Row Labels | Bldg Value | Bldg Count | Bldg Value | Bldg Count | Bldg Value | Bldg Count | Bldg Value | Bldg Count |
| Agriculture | $403,141 | 7 | $1,645,014 | 32 | | | $18,639,783 | 277 |
| Commercial | $43,523,655 | 48 | $40,122,134 | 105 | | | $1,478,215,969 | 2,582 |
| Government | $883,135 | 2 | $13,708,347 | 14 | | | $115,598,910 | 258 |
| Industrial | $15,684,882 | 48 | $18,260,407 | 126 | $11,061,826 | 3 | $941,423,779 | 2,313 |
| Institutional | $9,342,120 | 19 | $74,242,683 | 48 | $833,829 | 2 | $797,744,168 | 1,303 |
| Multi Family Residential | $143,554,658 | 712 | $297,041,819 | 1,392 | $42,150,009 | 61 | $6,344,964,245 | 32,387 |
| Misc Residential | $32,055 | 4 | $383,017 | 16 | | | $3,321,492 | 111 |
| Open Space | $0 | 6 | $0 | 23 | | | $0 | 188 |
| Single Family Residential | $632,784,946 | 2,826 | $1,218,018,411 | 5,373 | $40,334,385 | 203 | $20,342,152,825 | 109,150 |
| Grand Total | $845,408,592 | 3,682 | $1,661,421,832 | 7,129 | $94,379,849 | 269 | $30,042,061,171 | 148,569 |

Source: Seminole County GIS

### 3.8.6 Economic Impacts

Although repairing structural flood damages can be costly, they can also have economic impacts beyond building repairs. Floods can close down businesses for days, weeks, or longer. Businesses can lose their inventories, customers are unable to reach them, and employees are often unable to work. Below is a table which indicates the largest employers in Seminole County which make up much of the tax base.

**Table 11: Seminole County Major Employers**

| EMPLOYER | CITY | ZIP | NAICS 2 DIGIT GROUP | EMPLOYMENT (Rounded) |
|---|---|---|---|---|
| AdventHealth | Altamonte Springs | 32701 | Health Care and Social Assistance | 6,000 |
| Orlando Health | Longwood | 32750 | Health Care and Social Assistance | 3,000 |
| Deloitte Consulting | Lake Mary | 32746 | Professional, Scientific, and Technical Services | 2,000 |
| JPMorgan Chase Bank N.A. | Heathrow | 32746 | Finance and Insurance | 2,000 |
| HCA Florida | Sanford | 32771 | Health Care and Social Assistance | 2,000 |
| Mitsubishi Power Systems Americas | Lake Mary | 32746 | Other Services (except Public Administration) | 1,000 |
| Verizon Corporate Resources Group | Heathrow | 32746 | Information | 1,000 |
| Paylocity Corporation | Lake Mary | 32746 | Professional, Scientific, and Technical Services | 1,000 |
| BNY Mellon Bank / Pershing | Lake Mary | 32746 | Finance and Insurance | 1,200 |
| Liberty Mutual Insurance Company | Heathrow | 32746 | Finance and Insurance | 1,000 |
| Concentrix | Lake Mary | 32746 | Administrative and Support and Waste Management and Remediation Services | 1,000 |
| Synchrony Bank / GE Capital | Altamonte Springs | 32714 | Finance and Insurance | 1,000 |
| HF Management Services | Lake Mary | 32746 | Administrative and Support and Waste Management and Remediation Services | 1,000 |
| Lewis Tree Service | Oviedo | 32765 | Administrative and Support and Waste Management and Remediation Services | 900 |
| Sedgwick Claims Management Services | Lake Mary | 32746 | Finance and Insurance | 900 |
| American Automobile Association (AAA) | Heathrow | 32746 | Finance and Insurance | 800 |
| United Parcel Service (UPS) | Altamonte Springs | 32750 | Transportation and Warehousing | 700 |
| Brasfield & Gorrie | Lake Mary | 32746 | Construction | 700 |
| Cardworks Servicing | Lake Mary | 32746 | Administrative and Support and Waste Management and Remediation Services | 700 |
| Tri-City Electrical Contractors | Altamonte Springs | 32714 | Construction | 700 |
| Charter Communications | Lake Mary | 32746 | Information | |

| | | | | |
|---|---|---|---|---|
| | | | | 700 |
| Wharton-Smith | Sanford | 32771 | Construction | 600 |
| Allegiant Air | Sanford | 32773 | Transportation and Warehousing | 600 |
| Hartford Fire Insurance Company | Lake Mary | 32746 | Finance and Insurance | 600 |
| Frontline Insurance | Lake Mary | 32746 | Finance and Insurance | 500 |
| Ramon Protective of Orlando | Altamonte Springs | 32701 | Administrative and Support and Waste Management and Remediation Services | 500 |
| Universal Forming | Oviedo | 32765 | Construction | 500 |
| BioPlus | Altamonte Springs | 32701 | Retail Trade | 500 |
| Veritas Technologies | Heathrow | 32746 | Wholesale Trade | 500 |
| Continental Casualty Company | Lake Mary | 32746 | Finance and Insurance | 400 |
| CentralSquare Technologies | Lake Mary | 32746 | Information | 400 |
| Dynafire | Casselberry | 32707 | Administrative and Support and Waste Management and Remediation Services | 400 |
| Alorica | Lake Mary | 32746 | Administrative and Support and Waste Management and Remediation Services | 400 |
| Insurance Office of America (IOA) | Longwood | 32750 | Finance and Insurance | 400 |
| American Automobile Association (AAA) | Heathrow | 32746 | Other Services (except Public Administration) | 400 |
| Florida Cleaning Systems | Altamonte Springs | 32714 | Administrative and Support and Waste Management and Remediation Services | 400 |
| Southern Development & Construction | Oviedo | 32765 | Construction | 400 |
| Parallon Revenue Cycle Services / Medicredit | Casselberry | 32707 | Professional, Scientific, and Technical Services | 400 |
| SAP America | Lake Mary | 32746 | Wholesale Trade | 400 |
| Comprehensive Energy Services | Longwood | 32750 | Construction | 400 |
| The Briar Team | Sanford | 32771 | Construction | 300 |
| Joe M Hall Company | Sanford | 32771 | Construction | 300 |
| Online Labels Group | Sanford | 32773 | Manufacturing | 300 |
| Tijuana Flats Restaurants | Altamonte Springs | 32714 | Management of Companies and Enterprises | 300 |
| Orlando Sanford International | Sanford | 32773 | Transportation and Warehousing | 300 |
| Harper Limbach Company | Lake Mary | 32746 | Construction | 300 |
| Finastra USA Corporation | Lake Mary | 32746 | Professional, Scientific, and Technical Services | 300 |
| The Mortgage Firm | Altamonte Springs | 32714 | Finance and Insurance | 300 |
| Kroger Specialty Pharmacy | Lake Mary | 32746 | Retail Trade | |

| | | | | |
|---|---|---|---|---|
| | | | | 300 |
| Central Homes | Longwood | 32750 | Construction | 300 |
| Turningpoint Healthcare Solutions | Lake Mary | 32746 | Finance and Insurance | 300 |
| Strada Services | Sanford | 32771 | Construction | 400 |

Source: Seminole County Economic Development

According to the 2022 American Community Survey, Seminole County has approximately 246,000 individuals in its civilian labor force. The most common occupational groups among residents are Office and Administrative Support Occupations (approx. 24,900 workers), Sales and Related Occupations (approx. 20,800 workers), and Food Preparation and Serving-Related Occupations (approx. 22,100 workers). Other significant employment sectors include Business and Financial Operations, Management, and Educational Services, all of which contribute to the economic resilience of the County.

Given the county's exposure to flood hazards, economic impacts from flooding pose a considerable risk to its workforce and key employment sectors. Many of these occupations, especially in retail, food service, education, and healthcare, are dependent on fixed infrastructure and physical access, both of which can be severely disrupted during flood events. Prolonged business closures or service interruptions from flooding—particularly in commercial corridors adjacent to flood-prone areas such as those near Lake Monroe, Lake Jesup, and the St. Johns River—can result in both immediate income losses and longer-term economic displacement for residents.

As part of Seminole County's Floodplain Management Plan (FMP) and the Community Rating System (CRS) Activity 510, understanding the spatial relationship between employment centers and high-risk flood zones supports strategic planning for economic continuity, infrastructure resilience, and equitable recovery strategies. Flood-related economic analyses help identify vulnerable industries, prioritize infrastructure investments, and guide policy decisions that protect both jobs and tax revenue. These insights directly support CRS credit under Element 2.6, which encourages the inclusion of economic disruption in flood risk assessments.

The table below indicates the taxation value in Unincorporated Seminole County from 2005 through 2024 according to the County Property Appraiser.

**Table 12: Seminole County Residential vs Commercial Real Property Taxable Values**

**Seminole County**
**Residential vs Commercial Real Property Taxable Values**

| Year | Total Residential & Commercial Taxable Value | Residential* Taxable Value | Residential % | Commercial Taxable Value | Commercial % |
|---|---|---|---|---|---|
| 2005 | 22,045,984,247 | 15,275,779,817 | 69.29% | 6,770,204,430 | 30.71% |
| 2006 | 27,644,978,264 | 19,209,390,584 | 69.49% | 8,435,587,680 | 30.51% |
| 2007 | 31,355,604,397 | 21,975,482,744 | 70.08% | 9,380,121,653 | 29.92% |
| 2008 | 29,622,077,158 | 19,832,568,222 | 66.95% | 9,789,508,936 | 33.05% |
| 2009 | 26,048,437,078 | 17,257,115,116 | 66.25% | 8,791,321,962 | 33.75% |
| 2010 | 23,459,235,196 | 15,895,451,770 | 67.76% | 7,563,783,426 | 32.24% |
| 2011 | 22,162,027,852 | 14,926,810,367 | 67.35% | 7,235,217,485 | 32.65% |
| 2012 | 21,856,346,141 | 14,639,894,739 | 66.98% | 7,216,451,402 | 33.02% |
| 2013 | 22,569,686,600 | 15,295,254,001 | 67.77% | 7,274,432,599 | 32.23% |
| 2014 | 23,871,202,045 | 16,336,549,183 | 68.44% | 7,534,652,862 | 31.56% |
| 2015 | 25,274,276,680 | 17,251,747,576 | 68.26% | 8,022,529,104 | 31.74% |
| 2016 | 26,755,996,313 | 18,191,340,028 | 67.99% | 8,564,656,285 | 32.01% |
| 2017 | 28,698,420,687 | 19,465,677,705 | 67.83% | 9,232,742,982 | 32.17% |
| 2018 | 30,983,184,625 | 20,924,941,870 | 67.54% | 10,058,242,755 | 32.46% |
| 2019 | 33,543,570,244 | 22,437,547,775 | 66.89% | 11,106,022,469 | 33.11% |
| 2020 | 35,802,196,128 | 24,018,919,785 | 67.09% | 11,783,276,343 | 32.91% |
| 2021 | 37,780,379,388 | 25,623,618,407 | 67.82% | 12,156,760,981 | 32.18% |
| 2022 | 42,463,084,875 | 28,615,129,097 | 67.39% | 13,847,955,778 | 32.61% |
| 2023 | 46,854,826,757 | 31,552,518,173 | 67.34% | 15,302,308,584 | 32.66% |
| 2024 | 50,895,460,169 | 34,389,237,648 | 67.57% | 16,506,222,521 | 32.43% |

*Residential Values include DOR Codes 00, 01, 02, 03, 04, & 05

Seminole County holds the 6th highest taxable value in Florida based on value per square mile. Each square mile, on an average, in Seminole County contains $156,068,613 of taxable value. Taxable values for each municipality can be found in their respective jurisdictional profile appendices.

### 3.8.7 Repetitive Loss Properties

A repetitive loss property is a property that has experienced repeated flooding that caused financial losses. The National Flood Insurance Program (NFIP) is continually faced with the challenge of balancing the financial soundness of the program with the competing expectations of keeping premiums affordable. Repetitive loss properties are one of the largest obstacles to achieving financial soundness.

A repetitive loss property is defined as any insurable building for which two or more claims of more than $1,000 were paid by the NFIP within any rolling 10-year period since 1978. Two of the claims paid must be more than 10 days apart but, within 10 years of each other. A repetitive loss property may or may not be currently insured by the NFIP.

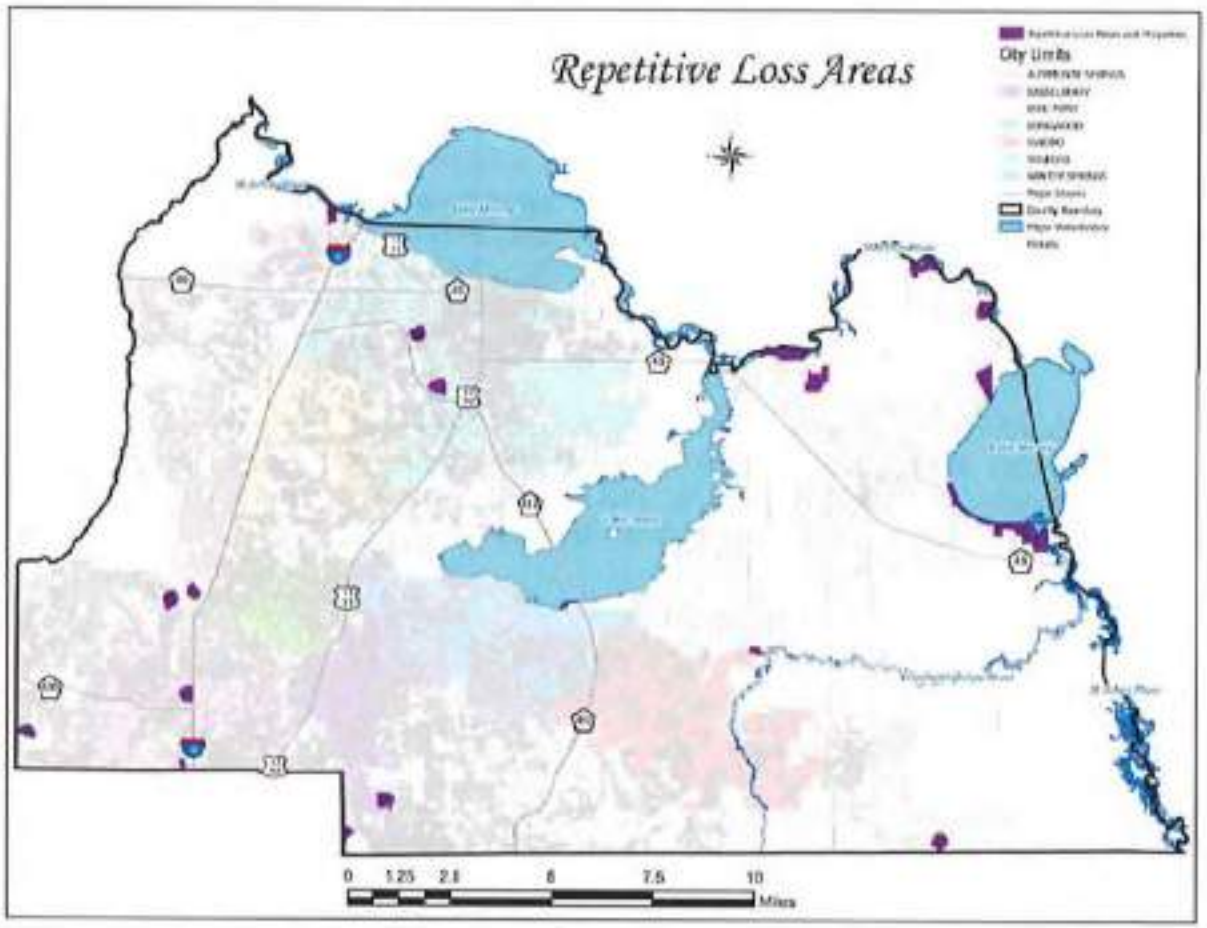
Severe Repetitive Loss properties consist of any NFIP-insured residential properties that have met at least 1 of the following paid flood loss criteria since 1978, regardless of ownership: four or more separate claim payments of more than $5,000 each, or two or more separate claim payments where the total of the payments exceeds the current value of the property.

Repetitive loss properties are the biggest draw on the National Flood Insurance Fund. Repetitive loss properties are not only costly; they also disrupt and threaten residents' lives. These properties may be sponsored by state or local government programs that mitigate the flood losses or provide information on how to mitigate flood losses through such measures as elevating buildings above the level of the base flood, demolishing buildings, removing buildings from the Special Flood Hazard Area, or local drainage improvement projects.

As of 2025, in unincorporated Seminole County, there are eighty (80) repetitive loss properties. Three (3) properties were previously designated as repetitive losses but have been removed from the list after being mitigated. $3,189,486 of building and contents damage has been incurred in total at these repetitive loss properties, with $11,667,225.11 of the damage having occurred on the unmitigated properties. A detailed analyses of each repetitive loss area is recommended to further assess the problem within each specific area of concern and provide recommendations for solutions.

The repetitive loss areas in Seminole County are shown in Figure 16 below. The repetitive loss areas may contain multiple repetitive loss properties, or a single repetitive loss property. Due to privacy restrictions, the individual properties that received the losses are not identified on the maps. Detailed areas of repetitive loss are shown in the following figures.

**Figure 14: Seminole County Repetitive Loss Property Areas**



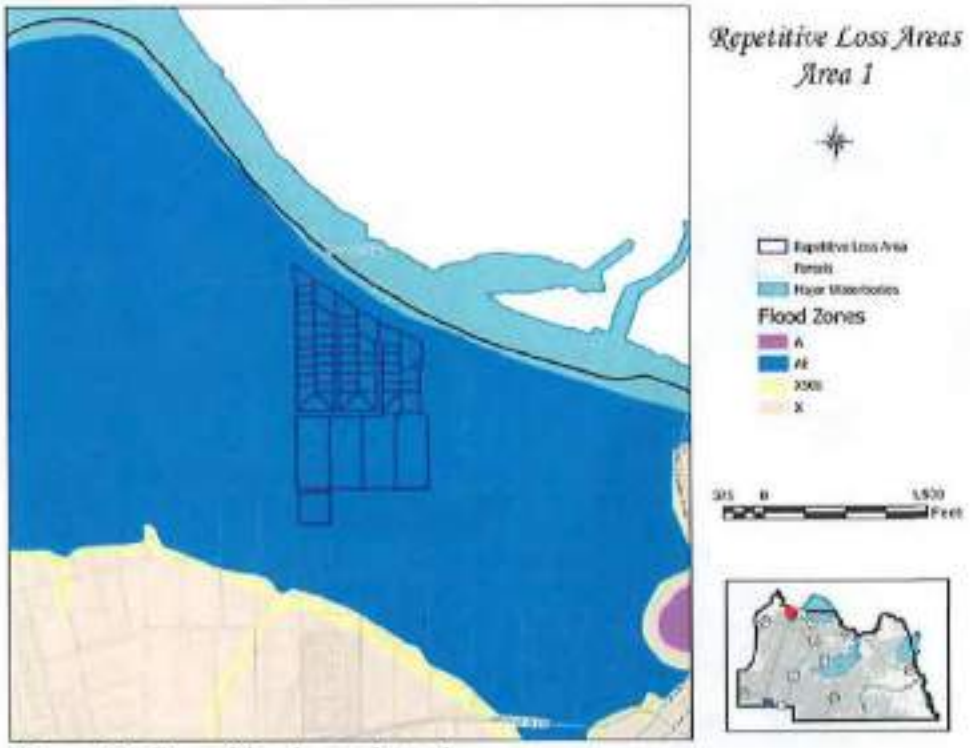



**Figure 15: Repetitive Loss Area 1**

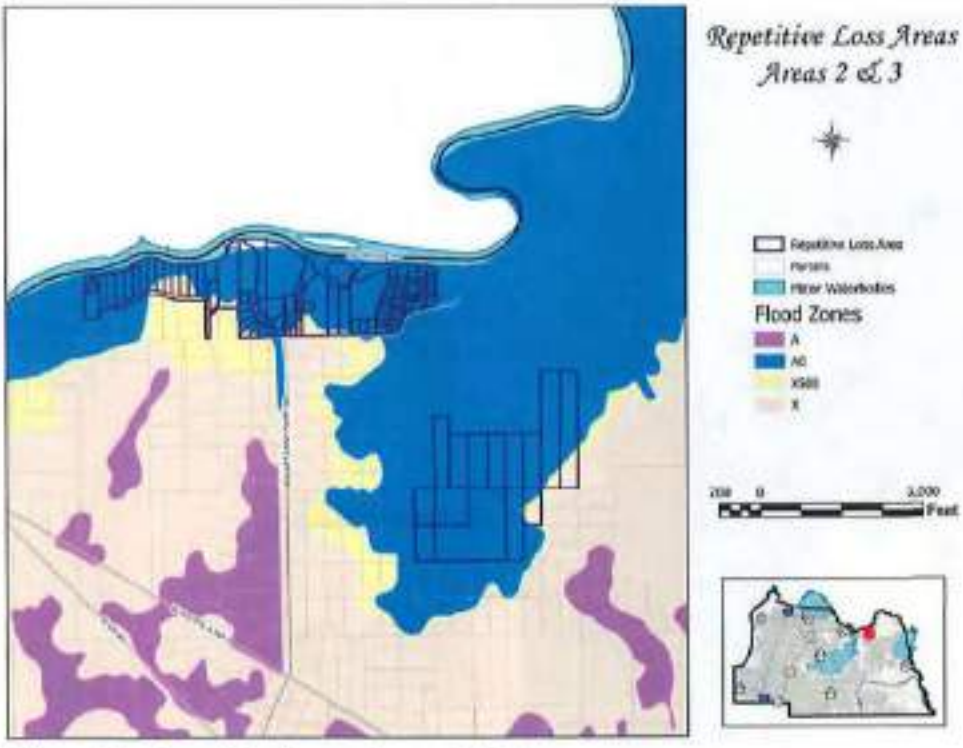



**Figure 16: Repetitive Loss Areas 2 & 3**

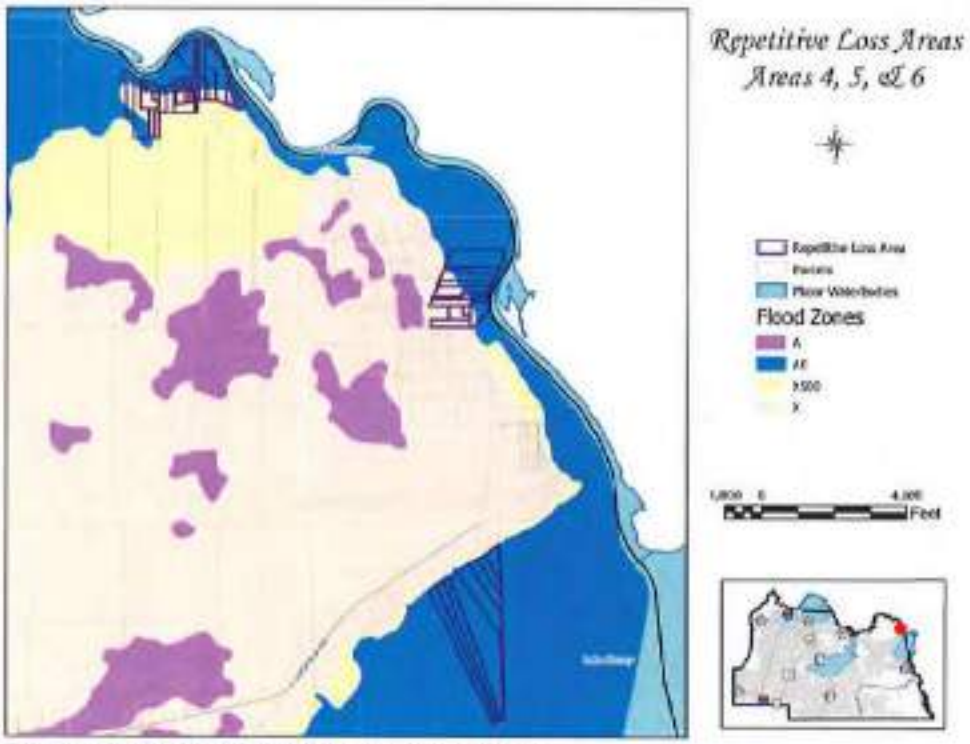



Figure 17: Repetitive Loss Areas 4, 5, & 6

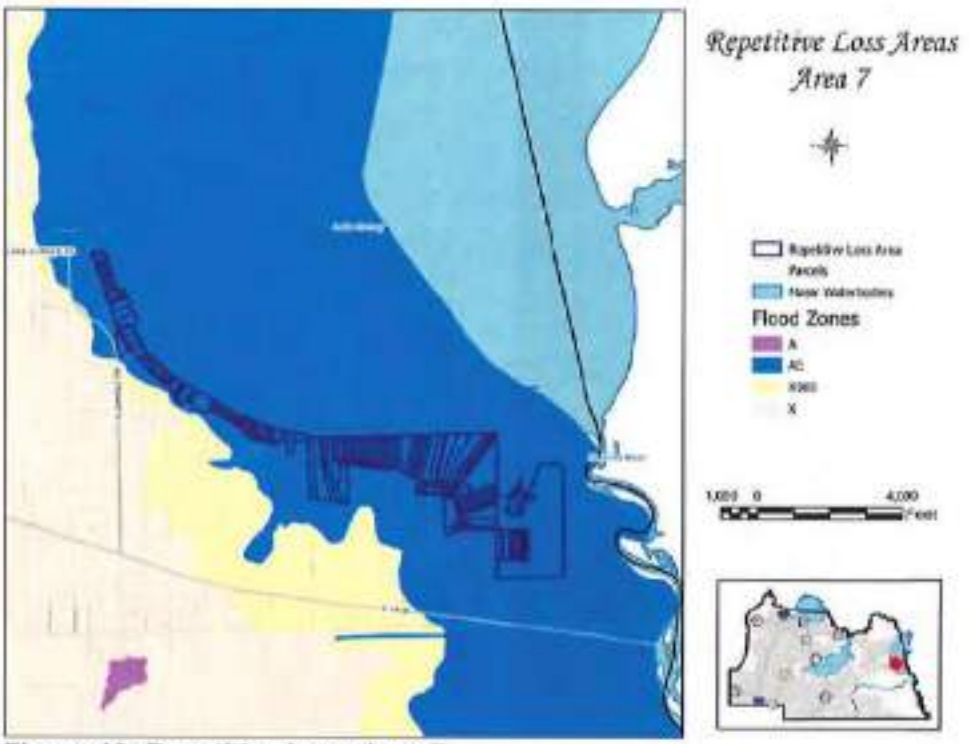



Figure 18: Repetitive Loss Area 7

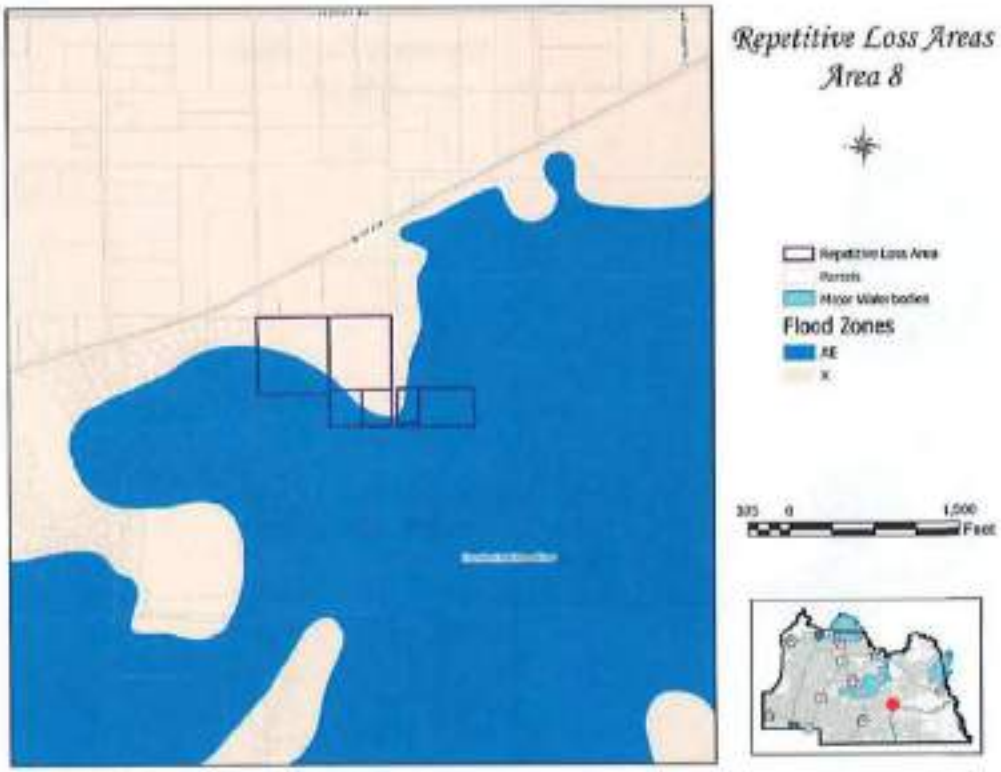



Figure 19: Repetitive Loss Area 8

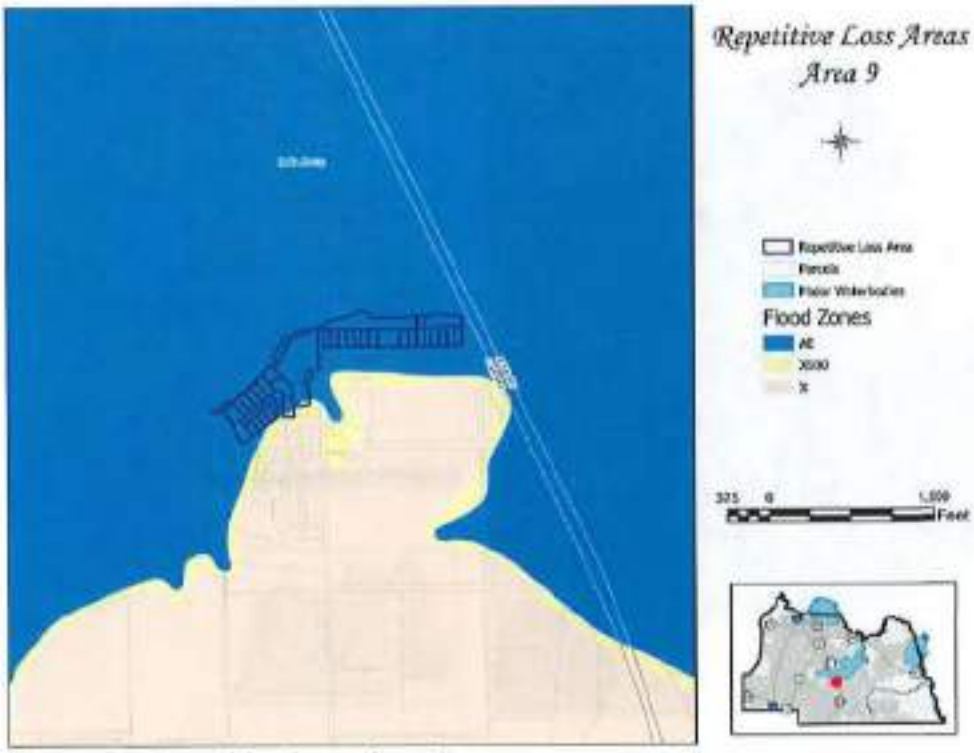



Figure 20: Repetitive Loss Area 9

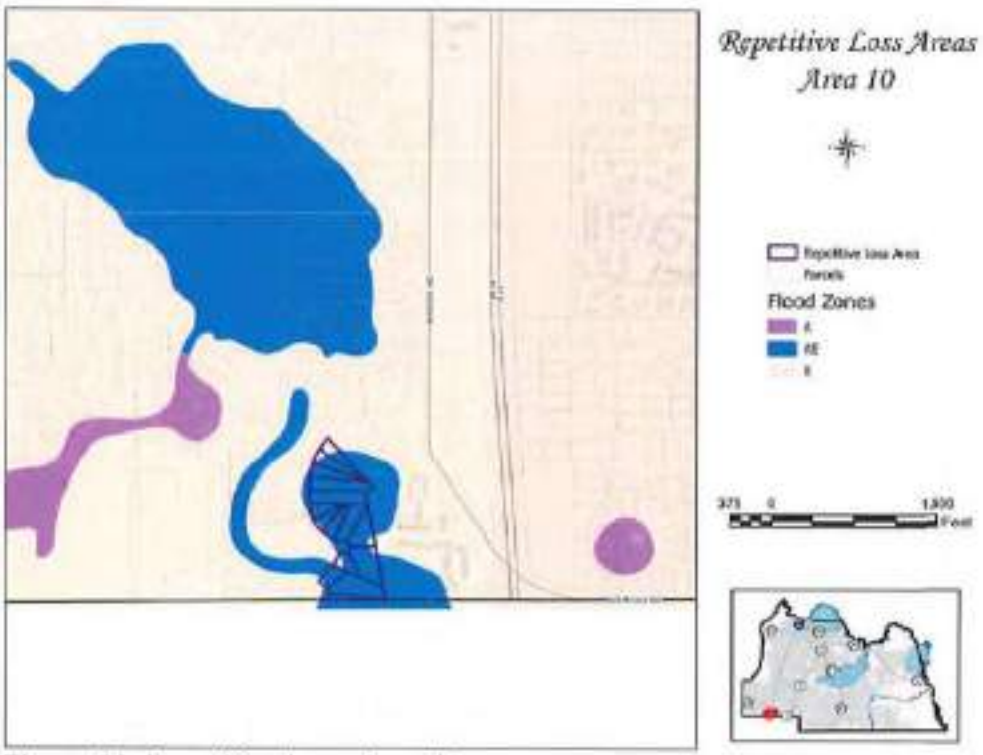



Figure 21: Repetitive Loss Area 10

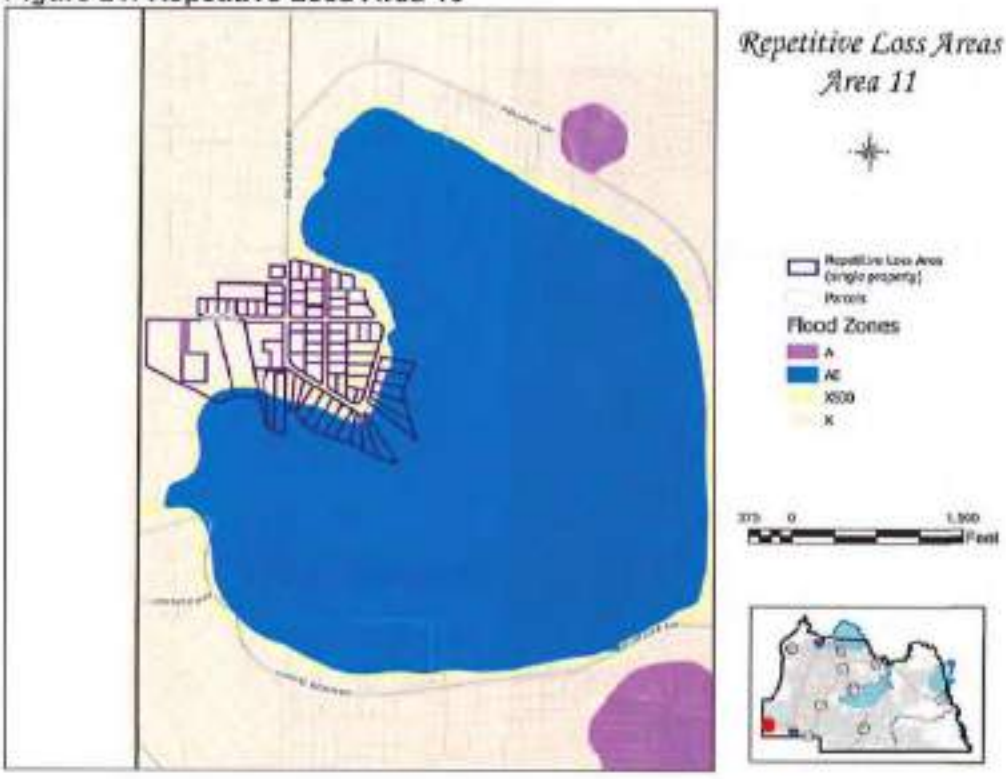


Figure 22: Repetitive Loss Area 11

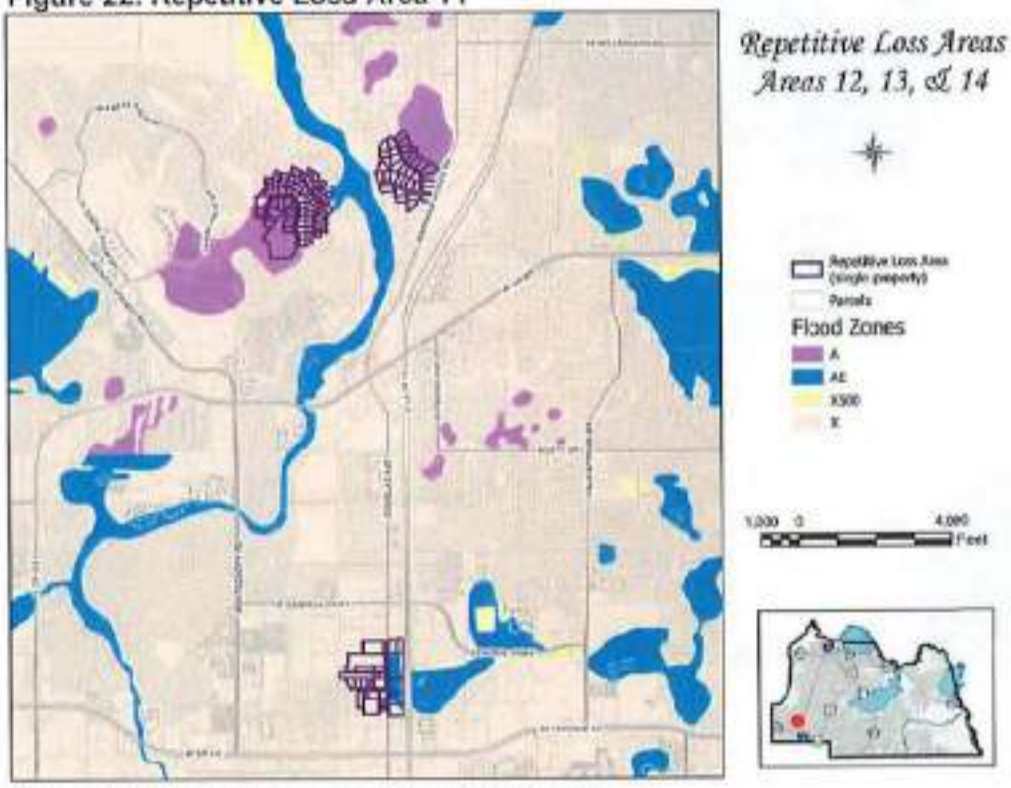



Figure 23: Repetitive Loss Area 12, 13, & 14

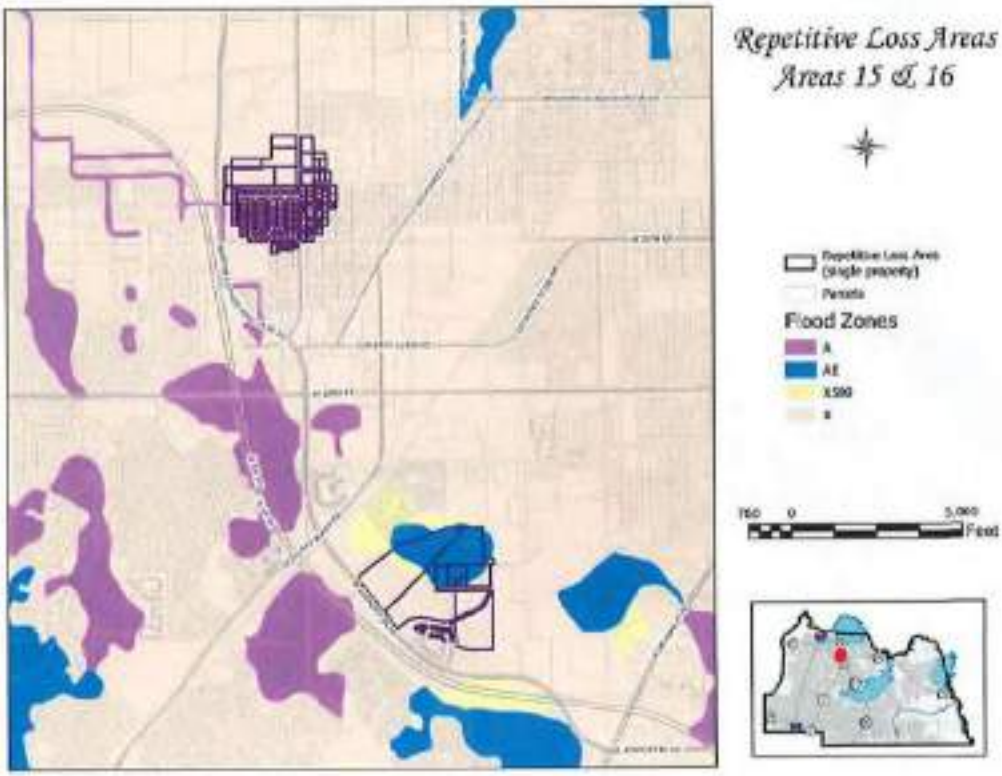



Figure 24: Repetitive Loss Area 15 &16

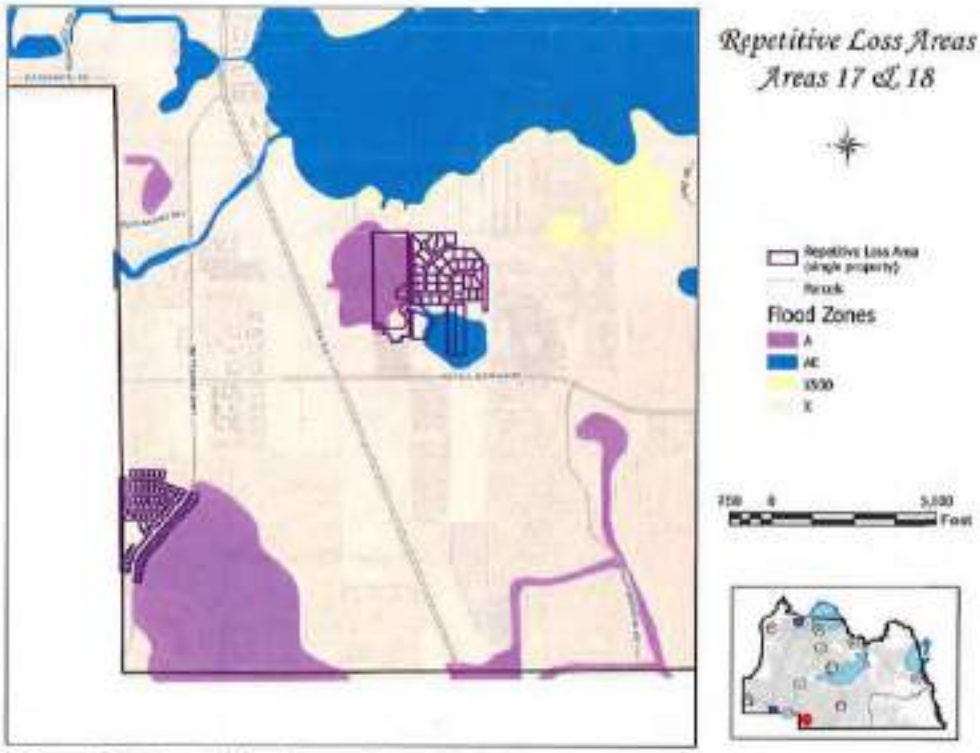



Figure 25: Repetitive Loss Area 17 & 18

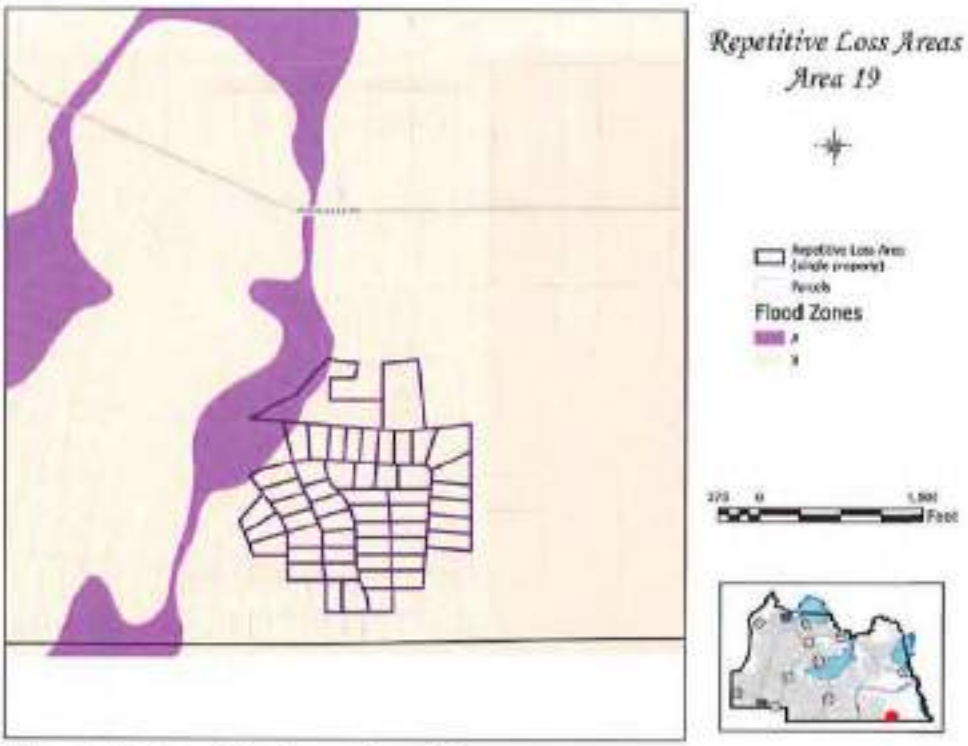



Figure 26: Repetitive Loss Area 19

## 3.9 Flood Warning Systems

Seminole County residents can sign up for the Alert Seminole Emergency Notification System, which provides timely alerts in the event of emergencies, including those requiring evacuation. Residents can register for this system by visiting the County's preparedness website at www.prepareseminole.org or by calling the Seminole County Office of Emergency Management at 407-665-5102. Additionally, residents can stay informed by tuning into a NOAA Weather Radio, particularly during hurricane season, or by calling the Citizen's Information Hotline at 407-665-0000.

Other agencies also provide vital flood-related notifications:

The National Weather Service (NWS) issues Flood Watches, Warnings, and Advisories, which are broadcast through NOAA Weather Radio, the Emergency Alert System (EAS), and Wireless Emergency Alerts (WEA) on mobile devices.

FEMA's Integrated Public Alert and Warning System (IPAWS) allows for the rapid dissemination of flood alerts through various national and local channels.

## 3.10 Natural and Beneficial Areas

Wetlands at the Lake Jesup Wilderness Area in Seminole County

In their natural, undeveloped state, floodplains play an important role in flooding. They allow flood waters to spread over a large area, reducing flood velocities and providing flood storage to reduce peak flows downstream. Natural floodplains reduce wind, and wave impacts, and their vegetation stabilizes soils. Natural cover acts as a filter for runoff and overbank flows, improving water quality and minimizing the amount of sediment transported downstream and the impurities in that sediment. Floodplains can be recharging areas for groundwater and reduce the frequency and duration of low flows of surface water. They provide habitat for diverse species of plants and animals, some of which cannot live in other habitats. Floodplains are particularly important as breeding and feeding grounds. Natural floodplains also moderate water temperature, reducing potential harm to aquatic plants and animals.

Seminole County preserves and manages several wilderness areas to protect biodiversity of species, wildlife corridors, and water resources while offering passive recreation areas for Seminole County residents. Through a voter approved referendum in 1990, a $20 million bond was established, creating the Seminole County Natural Lands Program. The primary purpose of this program is to systematically assess, rank and purchase environmentally significant lands throughout the County. These lands are purchased to preserve or restore their important

ecological functions as well as to provide sites for passive, resource-based recreational activities. Since the program's inception, Seminole County has purchased just over 6,600 acres. Many of the natural land areas are located within the Special Flood Hazard Area (SFHA) and provide natural and beneficial functions of a natural floodplain. Several of these sites have been opened for public access, as shown in Figure 29 on the next page.

The Seminole Forever Land Acquisition Program aims to protect and conserve lands by identifying and acquiring properties that conserve green space, provide passive recreational opportunities, and protect water resources and natural habitats. The initiative is funded by the County's General Fund and may include partnerships with local cities and nonprofits or other alternative funding sources. Seminole Forever does not require an additional tax on residents.

Wekiva River in Seminole County

Through the Seminole Forever program, the County commits to purchasing lands to protect natural communities, including wetlands and forestlands, and providing green space in both rural and urban areas. These lands may offer passive recreation amenities such as pavilions, restrooms, and playgrounds.

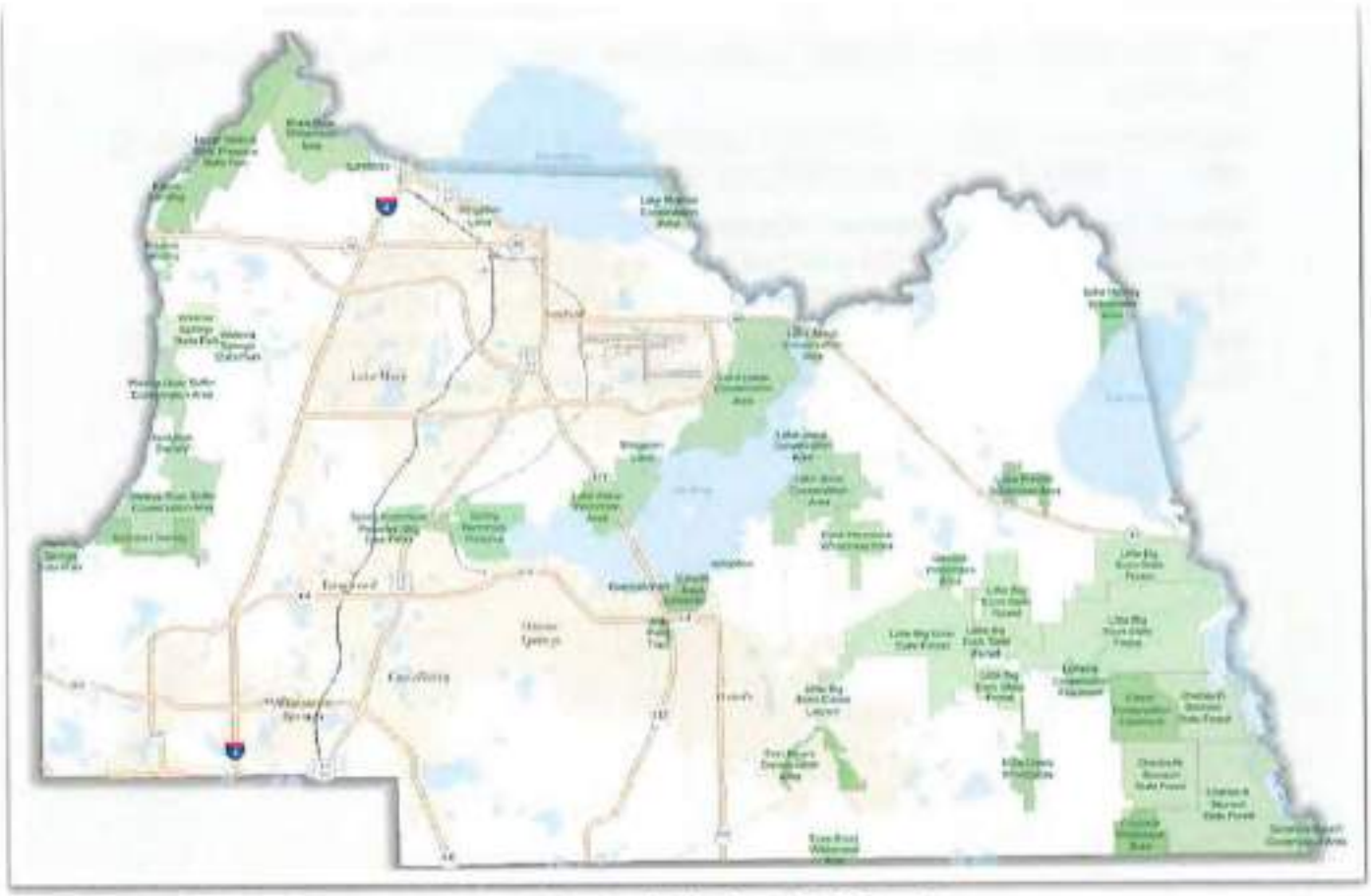


**Figure 27: Wilderness Area Open to the Public in Seminole County**

## 3.11 References

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# 4 Goals and Objectives

Chapter 3 documents the flood risk that threatens the unincorporated areas of Seminole County, the vulnerability of structures, infrastructure, and critical facilities to floods, and the capacity the County must reduce the flood hazard. The intent of Goal Setting is to identify areas where the County's existing capabilities (in terms of policies and programs) can be enhanced so that the community's overall vulnerability to flood hazards is reduced. Goals are also necessary to guide the review of possible mitigation measures. At the same time, this plan needs to ensure that recommended actions are consistent with what is appropriate for Seminole County. Mitigation goals need to reflect community priorities and be consistent with other plans for the County.

## 4.1 Background

### 4.1.1 Seminole County Local Mitigation and Resiliency Strategy

The goals of this plan need to be consistent with and complement the goals of other planning efforts. The primary planning document that this Floodplain Management Plan must complement and be consistent with is the Seminole County Local Mitigation Strategy. This plan will be adopted as an appendix to Seminole County Local Mitigation Strategy; therefore, the goals in both planning documents should align and not conflict. The six goals of the Seminole County Local Mitigation and Resiliency Strategy (LMRS)are:

- **Goal 1:** Local government shall make every reasonable effort to identify, develop, implement, and reduce hazard vulnerability through effective mitigation programs.
- **Goal 2:** All sectors of the community will work together to create a disaster resistant community.
- **Goal 3:** Reduce the vulnerability of critical infrastructures and public facilities from the effects of all hazards.
- **Goal 4:** Strengthen continuity planning for local government, businesses and community partners to avoid significant disruptions of services.
- **Goal 5:** Develop policies and regulation to support effective hazard mitigation programming throughout the community.
- **Goal 6:** Encourage economic vitality of the community by providing business continuity education, disaster planning, and diversifying employment opportunities.

## 4.2 Goals

During the Goals and Objectives Floodplain Management Planning Committee Meeting on May 28th, 2025 the FMP Committee agreed upon five general goals for this planning effort. The goals were refined and objectives in support of the goals were also added.

Goal 1: Reduce vulnerability and exposure to flood hazards in order to protect the lives, health, safety, and property of Seminole County residents and guests.

**Objective 1.1:** Focus mitigation efforts on flooding resulting from heavy rainfall which causes runoff, overbank, backwater, and stormwater issues to keep the problem from getting worse

**Objective 1.2:** Implement regulatory measures to guide new development in areas that are more likely to be exposed to the effects of flood damage

**Objective 1.3:** Preserve open space in Special Flood Hazard Area (SFHA) areas, especially where there are sensitive natural areas and agricultural lands

**Objective 1.4:** Protect the environmental integrity of the natural water systems in Seminole County by focusing on water quality and best management practices

**Objective 1.5:** Continue to protect aquifers and environmentally sensitive lands from encroachment of development by requiring buffers and other setbacks mechanisms

**Objective 1.6:** Reduce stormwater runoff through adequate stormwater management, flood control, on-site retention and best management practices to mitigate impacts associated with incremental construction and redevelopment projects

Goal 2: Enhance public education, information, and warning systems to improve safety and communication for the protection of residents and visitors of Seminole County.

**Objective 2.1:** Leverage state and federal emergency management funding for planning, training and equipment

**Objective 2.2:** Seek funding for the installation of stream and river gauges to help provide increased flood warning capability

**Objective 2.3:** Monitor technological advancements and implement new technologies where applicable to ensure reliable communications with residents and guests

Goal 3: Encourage property owners through education and outreach measures to protect their homes and businesses from flood damage.

**Objective 3.1:** Empower residents to take proactive responsibility for future flood risk protection and pursuit of mitigation efforts to their property.

**Objective 3.2:** Promote flood insurance as a property protection measure against flood damage through multiple methods, including enhancements to the county website to provide information on comprehensive flood preparedness/protection and flood insurance

**Objective 3.3:** Educate property owners, including those with repetitive loss properties, on mitigation opportunities to mitigate future flood risk.

Goal 4: Protect critical and cultural assets, public infrastructure, and businesses from flood hazards and reduce the vulnerability of flood damage to these assets.

**Objective 4.1:** Seek County, Regional, State, Federal, and other funding support for flood mitigation projects

**Objective 4.2:** Identify and implement flood mitigation measures or strategies as necessary to protect critical infrastructure and facilities from flood damage

Goal 5: Identify properties susceptible to flood damage and implement cost-effective and affordable improvements, including those which reduce the number of repetitively damaged structures.

**Objective 5.1:** Leverage mitigation funding opportunities to facilitate buyouts, elevations and other mitigation efforts to alleviate flood risk

**Objective 5.2:** Target repetitive loss properties for implementation of mitigation projects

**Objective 5.3:** Allow continued opportunities for members of the public to be part of the planning process, including identifying areas susceptible to flooding

**Objective 5.4:** Acquire and leverage new technologies and data collection tools to allow for better informed floodplain management, and flood mitigation

# 5 Preventive Measures

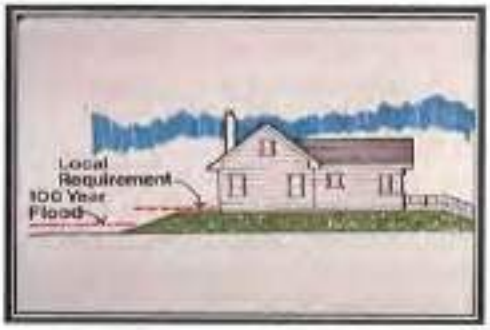
Preventive measures are designed to keep a problem such as flooding from occurring or from getting worse. The objective of preventive measures is to ensure that future development is not exposed to damage and does not cause an increase in damage to other properties. Building, zoning, planning and code enforcement offices usually administer preventive measures. Some examples of types of preventive measures include:

- Building codes
- Planning and zoning
- Open space preservation
- Floodplain regulations
- Stormwater management

## 5.1 Building Codes

Building codes provide one of the best methods of addressing flood hazards. When properly designed and constructed according to code, the average building can withstand many of the impacts of natural hazards. Hazard protection standards for all new and improved or repaired buildings can be incorporated into the local building code. Building codes can ensure that the first floors of new buildings are constructed to be higher than the elevation of the 100-year flood (the flood that is expected to have a one percent chance of occurring in any given year). Building codes in Seminole County also require that driveways are sloped to prevent flood water from draining into a building.

**Figure 28: Elevated Home**




Just as important as having code standards is the enforcement of the code. Adequate inspections are needed during construction to ensure the builder understands the requirements and is following them. Making sure a structure is properly anchored requires site inspections at each step.

Seminole County's Code of Ordinances adopts the Florida Building Code by reference, and the State of Florida has some of the most stringent building codes in the nation. Nonetheless, during planning meetings where the mitigation strategies were evaluated, the FMPC discussed possible ways to strengthen Seminole County's building codes. There is relatively no cost involved in strengthening codes, but since the County adopts the Florida Building Code, the possibility of exceeding current code requirements is extremely slim. Another possibility discussed was to increase the freeboard requirement for buildings to be built higher than the current 1 ft. above the base flood elevation.

### 5.1.1 Manufactured Homes

Manufactured or mobile homes are usually not regulated by local building codes. They are built in a factory and out of state, and they are shipped to a site. They do have to meet construction standards set by the U.S. Department of Housing and Urban Development. All mobile homes constructed after 1976 must comply with HUD's National Manufactured Home Construction and Safety Standards. These standards apply uniformly across the country, and it is illegal for a local unit of government to require additional construction requirements. Local jurisdictions may regulate the location of these structures and their on-site installation.

The 2022 Seminole County Disaster Housing Plan found that Seminole has 5,584 mobile/manufactured homes countywide. 4,791 manufactured homes are in commercial group parks, numerous individual trailers are located in the north and east areas of the County. These may become inaccessible after heavy rains due to the lack of paved roads and marshy land composition and elevation. The NFIP allows communities to exempt mobile homes in existing mobile home parks from some of the flood protection requirements. The CRS provides up to 50 points if the community does not use this exemption. Seminole County does not use this exemption.

### 5.1.2 Local Implementation

Seminole County enforces the Florida Building Code, 8th Edition (2023), which is based on the International Building Code (IBC) and adapted to address Florida's specific conditions. The County's floodplain management ordinance requires that all development within Special Flood Hazard Areas be designed and constructed to be reasonably safe from flooding. This includes ensuring that new construction and substantial improvements are designed or retrofitted and adequately anchored to prevent flotation, collapse, or lateral movement during flood events.

New construction and substantial improvements must utilize methods and materials that minimize flood damage and resist hydrostatic and hydrodynamic forces. Additionally, construction in Seminole County must adhere to the following stipulations

**Residential**: 1-foot above BFE (Base Flood Elevation).

**Non-residential**: 1-foot above BFE OR dry-floodproofed to 1-foot above BFE. Dry-floodproofing must be certified by an architect or professional engineer.

CRS Credit

The CRS encourages strong building codes. It provides credit in two ways: points are awarded based on the community's BCEGS (Building Code Effectiveness Grading Schedule) classification and points are awarded for adopting the International Code series. Seminole

County's BCEGS rating is Class 4 for residential and Class 3 for commercials. Seminole County uses the 2023 Florida Building (8th Edition) Code adopted and effective statewide December 31, 2023.

The CRS also has a prerequisite for a community to attain a CRS Class 8 or better: the community must have a BCEGS class of 6 or better. To attain a CRS Class 4 or better, the community must have a BCEGS class of 5 or better.

## 5.2 Planning and Zoning

Building codes provide guidance on how to build in hazardous areas. Planning and zoning activities direct development away from these areas, especially floodplains and wetlands. They do this by designating land uses that are compatible with the natural conditions of lands prone to flooding, such as open space or recreation. Planning and zoning activities can also provide benefits simply by allowing developers more flexibility in arranging improvements on a parcel of land through the planned development approach.

### 5.2.1 Comprehensive Plans

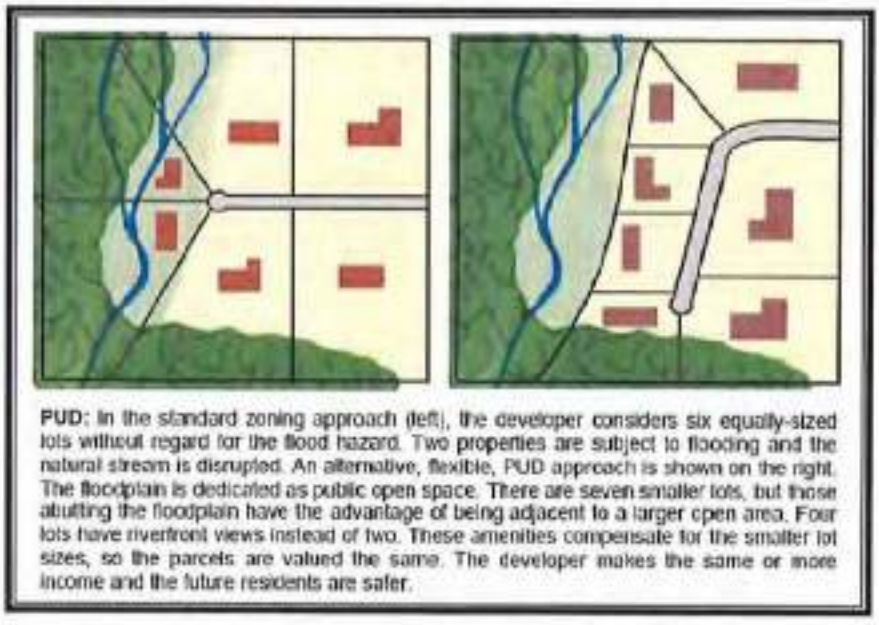
These plans are the primary tools used by communities to address future development. They can reduce future flood-related damage by indicating open space or low-density development within floodplains and other hazardous areas. Unfortunately, natural hazards are not always emphasized or considered in specific land use recommendations.

Generally, a plan has limited authority. It reflects what the community would like to see happen. Its utility is that it guides other local measures, such as capital improvement programs, zoning ordinances, and subdivision regulations.

### 5.2.2 Zoning Regulations

A zoning ordinance regulates development by dividing a community into zones and setting development criteria for each zone. Zoning codes are considered the primary tool to implement a comprehensive plan's guidelines for how land should be developed. Zoning ordinances can limit development in hazardous areas, such as reserving floodplain zones for agricultural uses. Often, developers will produce a standard grid layout. The ordinance and the community can allow flexibility in lot sizes and location so developers can avoid hazardous areas.

**Figure 29: Planned Unit Developments**



PUD: In the standard zoning approach (left), the developer considers six equally-sized lots without regard for the flood hazard. Two properties are subject to flooding and the natural stream is disrupted. An alternative, flexible, PUD approach is shown on the right. The floodplain is dedicated as public open space. There are seven smaller lots, but those abutting the floodplain have the advantage of being adjacent to a larger open area. Four lots have riverfront views instead of two. These amenities compensate for the smaller lot sizes, so the parcels are valued the same. The developer makes the same or more income and the future residents are safer.

One way to encourage such flexibility is to use a planned unit development (PUD) approach. This approach allows developers to incorporate flood hazard mitigation measures into projects. Open space or floodplain preservation can be facilitated as site design standards and land use densities can be adjusted to fit the property's specific characteristics, as shown in Figure 31.

### 5.2.3 Capital Improvement Plans

A capital improvement plan will guide a community's major public expenditures for a five- to 20-year period. Capital expenditures may include acquisition of open space within the hazardous areas, extension of public services into hazardous areas, or retrofitting existing public structures to withstand a hazard. Seminole County's Capital Improvement Projects are tracked publicly online through an interactive map provided through ArcGIS. This map and associated project list can be found posted on the Seminole county government website.

### 5.2.4 Local Implementation

The *Seminole County Comprehensive Plan* includes conservation goals to address the long-range implementation of programs aimed at meeting environmental regulations and preserving the County's natural amenities. Seminole County uses a multi-faceted system to direct incompatible land uses away from wetlands. To date, this system has managed to preserve most of the wetland acreage in the urban area. There are three primary methods by which the County directs incompatible land uses away from wetlands, and several secondary methods. The primary methods are:

1. **Identification of environmentally sensitive lands.** These lands are to be preserved during the development process.
2. **Land acquisition.** Seminole County also protects wetlands through land acquisition via the County's Natural Lands Program. In combination with the efforts of the U.S. Army Corps of Engineers, the Florida Department of Environmental Protection and the St.

Johns River Water Management District, over 18,000 acres of the County's 41,000 acres of wetlands are in public ownership. This is roughly 44% of County lands.

3. **Special areas.** The County and the State have designated areas for special consideration to protect wetlands, including the Wekiva River Protection Area, the Econlockhatchee River Protection Zone, and the East Rural Area. These three areas make up roughly 75 percent of the County's unincorporated area. Development within these areas is managed and regulated to protect natural resources and maintain their rural character.

The secondary method of directing incompatible uses away from wetlands are through the implementation and execution of the *Comprehensive Plan's* Future Land Use designations and Seminole County's Land Development Code.

1. **Special Techniques.** For example, allowing clustering of development, or planned development, in exchange for preserving open areas which protects natural resources from development.
2. **Environmentally Sensitive Land Overlay.** Seminole County maintains an Environmentally Sensitive Lands Overlay Area, as defined in the Comprehensive Plan. The Environmentally Sensitive Lands Overlay Area includes any areas flooded during a 100-year flood event or identified by NFIP as Zone A or Zone V, as well as wetlands as defined by the St. Johns River Water Management District. This designation is used to limit permitted uses on wetland properties and direct development away from environmentally sensitive lands.
3. **The Urban/Rural Boundary.** This boundary forms the foundation for both wetland regulation and for the land uses that are assigned throughout the County. Having established that the East Rural Area contains a high-quality mosaic of valuable wetland and upland systems, the County has adopted a limited number of land use designations of very low density in the Rural Area to protect these resources.

### 5.2.5 CRS Credit

The CRS provides flood insurance discounts to those communities that implement various floodplain management activities that meet certain criteria. Comparing local activities to those national criteria helps determine if local activities should be improved.

Up to 100 points are provided for regulations that encourage developers to preserve floodplains or other hazardous areas from development. There is no credit for a plan, only for the enforceable regulations that are adopted pursuant to a plan. Up to 600 points are provided for setting aside floodplains for low density zoning, such as five acre lots or conservation.

## 5.3 Open Space Preservation

Keeping the floodplain and other hazardous areas open and free from development is the best approach to preventing damage to new developments. Open space can be maintained in agricultural use or can serve as parks, greenway corridors and golf courses.

Comprehensive and capital improvement plans should identify areas to be preserved by acquisition and other means, such as purchasing an easement. With an easement, the owner is

free to develop and use private property, but property taxes are reduced or a payment is made to the owner if the owner agrees to not build on the part set aside in the easement.

Although there are some federal programs that can help acquire or preserve open lands, open space lands and easements do not always have to be purchased. Developers can be encouraged to dedicate park land and required to dedicate easements for drainage and maintenance purposes. These are usually linear areas along property lines or channels. Maintenance easements also can be donated by streamside property owners in return for a community maintenance program.

### 5.3.1 Local Implementation

In 1990, the voters of Seminole County approved a $20 million bond which created the Seminole County Natural Lands Program (NLP). The NLP established a systematic process to identify, rank, and acquire environmentally significant lands throughout the County.

In 2000, a voter-approved referendum provided $25 million, allocating $20 million in support of the County trails program and $5 million for additional natural lands preservation. These funds were used to purchase land to protect and restore critical ecological functions and to provide sites for passive, resource-based recreational activities. Since its inception, Seminole County has acquired and currently manages more than 7,300 acres of land through the Natural Lands Program.

Building upon this legacy of conservation, in 2023, the Seminole County Board of County Commissioners formally launched the Seminole Forever Program, a dedicated land acquisition and conservation funding initiative modeled after the state's Florida Forever program. Seminole Forever allocates at least $5 million annually to secure additional high-priority conservation lands. The program emphasizes protection of flood-prone areas, wetlands, and wildlife corridors that contribute to water quality, aquifer recharge, and flood hazard mitigation.

The County's adoption of flood-prone and wetland ordinances has been a critical step in providing comprehensive protection of sensitive natural areas. The wetlands protection program has established an extensive network of conserved lands under conservation easements. Conservation easements are employed to safeguard post-development flood-prone and wetland areas. These easements, which blanket the areas of concern, are granted to Seminole County, state or federal agencies, or some combination thereof. They permanently limit future encroachment or development and ensure long-term protection of flood-prone and wetland resources. Conservation easements are required for all developments—other than single-family residences—that include post-development flood-prone or wetland areas within their site boundaries and may be granted as specified in Section 35.101(a)–(c) of the Land Development Code.

Land acquisition efforts by Seminole County, the Seminole Forever Program, and the State of Florida, and the Florida Audubon Society have led to the conservation of major wetland systems in the Econlockhatchee, Wekiva, St. Johns, and Lake Jesup Basins. Ongoing initiatives continue

to prioritize preservation of intact wetland systems and associated floodplain habitats in the rural portions of the County. Preserved lands in Seminole County are shown in the figure below.


**Figure 30: Preserved Lands in Seminole County**

Florida Natural Areas Inventory: Florida Conservation Lands

Wilderness areas and trails created from these referendums include the Black Bear, Black Hammock, Geneva, Chuluota, Lake Proctor, Econ River, Lake Jesup, and Spring Hammock Preserve. These environmental assets are open to the public for environmental education and passive recreation. The County designated these lands as "Preservation/Managed Lands" on the Future Land Use Plan Map in 2008. Seminole County continues to manage approximately 7,300 acres of Natural Lands acquired through these bond referendum for the preservation of significant natural habitats, open space areas and greenways.

In addition, the Comprehensive Plan states that the County shall include in its Land Development Code neighborhood performance standards for

"common, liked and usable open space for active and/or passive recreation, including interconnected walkways, bikeways, trails and greenways" as well as "Preservation of onsite natural lands." The County's Land Development Code requires that all new development, unless otherwise specified within the Code, include a minimum amount of urban, suburban or rural open space and that open space areas within a development be connected to each other. The amount and type of required open space varies with the character of the proposed development and surrounding land uses. For commercial developments, the open space ratio is a minimum of 25% of the parcel.

Seminole County's conservation strategy is rooted in the recognition that protecting natural lands is essential for sustaining ecological health, reducing flood risk, and supporting community resilience. This strategy integrates land acquisition, regulatory protections, and collaborative partnerships to achieve long-term stewardship of the County's unique natural resources. Through programs such as the Seminole County Natural Lands Program and Seminole Forever, the County prioritizes the preservation of flood-prone areas, wetlands, and wildlife corridors that perform critical functions—absorbing stormwater, maintaining water quality, recharging the Floridan Aquifer, and buffering developed areas from flood hazards.

The Seminole County Conservation Strategy complements broader state and federal conservation initiatives, aligning closely with the goals of the Florida Forever program and regional watershed protection efforts. By strategically acquiring properties in the Econlockhatchee, Wekiva, St. Johns, and Lake Jesup basins, the County is able to create interconnected conservation corridors that enhance habitat connectivity, safeguard endangered species, and preserve the character of rural landscapes. Conservation easements adopted land development regulations, and interagency coordination further reinforce this approach by ensuring that acquired lands and regulated floodplains remain protected in perpetuity.

This proactive conservation framework is an integral component of the County's floodplain management program. It directly advances mitigation objectives outlined in the Floodplain Management Plan by reducing the exposure of people and property to flood hazards and maintaining the natural floodplain functions that moderate flood flows. As Seminole County continues to grow, the conservation strategy will remain central to balancing development pressures with the need to protect the ecological systems that underpin community safety, quality of life, and economic sustainability.

### 5.3.2 CRS Credit

Preserving flood prone areas as open space is one of the highest priorities of the Community Rating System. Up to 1,450 points can be given for keeping land vacant through ownership or regulations (Activity 420 – Open Space Preservation).

## 5.4 Subdivision Regulations

Subdivision regulations govern how land is divided and establish construction standards for infrastructure such as roads, sidewalks, utilities, storm sewers, and drainage systems. When applied effectively, these regulations can incorporate flood protection standards that mitigate future flood risks. Regulations on subdivisions can be found on the Seminole County Website under "Subdivision Application Procedure Summary". Regulations include:

- Requiring final plats to delineate all Special Flood Hazard Areas (SFHAs)
- Ensuring each buildable lot contains a site elevated above the base flood elevation (BFE)
- Limiting roadway depressions to no more than one foot below the adjacent BFE
- Final plats must show all lands below the 100-year floodplain elevation and/or wetlands, which must be dedicated as conservation easements—either to Seminole County or, in private subdivisions, to the homeowners' association
- Floodplain and wetland lines must be clearly delineated, and the name of the environmental consultant who flagged these areas must be included on the plat
- Canals, Floodways and waterways (including location and width) must be shown on subdivision plats
- Conservation easement language is required, specifying maintenance obligations, restrictions on vegetation removal, and limited boardwalk or dock construction within floodplain and wetland buffers

### 5.4.1 Local Implementation

Seminole County's Land Development Code and Engineering Manual require that final subdivision plats clearly depict the 100-year floodplain boundary, consistent with FEMA's Flood Insurance Rate Maps (FIRMs). Additionally, plat review includes elevation and grading assessments to ensure adequate drainage and flood hazard avoidance. Developers must demonstrate that new lots will not be flood-prone or impede natural stormwater flow. These subdivision requirements directly support compliance with CRS Activity 430 (Higher Regulatory Standards) and help reduce exposure to repetitive flood losses.

## 5.5 Floodplain Regulations

Seminole County participates in the National Flood Insurance Program (NFIP), meeting or exceeding the program's minimum requirements for development, land subdivision, and construction in flood hazard areas. The County enforces its Floodplain Management Ordinance in accordance with FEMA's 44 CFR §60 and the Florida Building Code, 8th Edition (2023), which is based on the International Building Code (IBC) but modified for Florida-specific conditions.

To qualify for Community Rating System (CRS) credit under Activity 410 (Floodplain Mapping) and Activity 430 (Higher Regulatory Standards), Seminole County has adopted additional floodplain management measures beyond NFIP minimums, including:

Freeboard requirement: Residential and non-residential structures must be elevated at least one foot above BFE

Floodproofing options for non-residential structures

Elevation certificates for new and substantially improved structures

Protection of critical facilities to a higher standard

### 5.5.1 Enforcement

To ensure that communities are meeting the NFIP standards, FEMA periodically conducts a Community Assessment Visit. During this visit, the maps and ordinances are reviewed, permits are checked, and issues are discussed with staff. Failure to meet all of the requirements can result in one or more consequences:

- Reclassification under the Community Rating System to a higher class
- Probation, which entails a $50 surcharge on every flood insurance policy in the county, or
- Suspension from the NFIP. If a community is suspended, the following sanctions are imposed:
    - Flood insurance will not be available. No resident will be able to purchase a flood insurance policy.
    - Existing flood insurance policies will not be renewed.
    - No direct federal grants or loans for development may be made in identified flood hazard areas under programs administered by federal agencies, such as HUD, EPA, and the Small Business Administration.
    - Federal disaster assistance will not be provided to repair insurable buildings located in identified flood hazard areas for damage caused by a flood.
    - No federal mortgage insurance or loan guarantees may be provided in identified flood hazard areas. This includes policies written by FHA (Federal Housing Administration), VA (Veterans Affairs), and others.
    - Federally insured or regulated lending institutions, such as banks and credit unions, must notify applicants seeking loans for insurable buildings in flood hazard areas that there is a flood hazard, and the property is not eligible for federal disaster relief.

These sanctions can be severe for any community with a substantial number of buildings in the floodplain. Most communities with a flood problem have joined the NFIP and are in full compliance with their regulatory obligations.

One way to assure good administration and enforcement is to have Certified Floodplain Managers on staff. The Association of State Floodplain Managers administers the national Certified Floodplain Manager (CFM®) program. Certification involves a three-hour exam and a requirement for continuing education each year. The exam covers the regulatory standards of the National Flood Insurance Program as well as mapping, administration, enforcement and flood hazard mitigation.

### 5.5.2 Minimum NFIP Regulatory Requirements

The NFIP is administered by FEMA. As a condition of making flood insurance available for their residents, communities that participate in the NFIP agree to regulate new construction in the

area subject to inundation by the 100-year (base) flood. The floodplain subject to these requirements is shown as an A or V Zone on the Flood Insurance Rate Map (FIRM).

There are five major floodplain regulatory requirements. Additional floodplain regulatory requirements may be set by state and local laws.

1. Continue to enforce their adopted Floodplain Management Ordinance requirements, which include regulating all new development and substantial improvements in Special Flood Hazard Areas (SFHA).

2. Continue to maintain all records pertaining to floodplain development, which shall be available for public inspection.

3. Continue to notify the public when there are proposed changes to the floodplain ordinance or Flood Insurance Rate Maps.

4. Maintain the map and Letter of Map Change repositories.

5. Continue to promote Flood Insurance for all properties.

Communities are encouraged to adopt local ordinances that are more comprehensive or provide more protection than the federal criteria. The NFIP's Community Rating System provides insurance premium credits to recognize the additional flood protection benefit of higher regulatory standards.

### 5.5.3 Local Implementation

Seminole County's Floodplain Ordinance meets all of the NFIP's floodplain regulatory requirements. The County's Floodplain Ordinance exceeds minimum NFIP standards for a number of elements that are credited in the CRS.

### 5.5.4 CRS Credit

There are many higher regulatory standards that warrant CRS credit. These standards include:

- Delineating a floodway, the area of higher hazard near the channel. This would allow development outside the floodway (called the "floodplain fringe") without engineering studies to determine their impact on others.

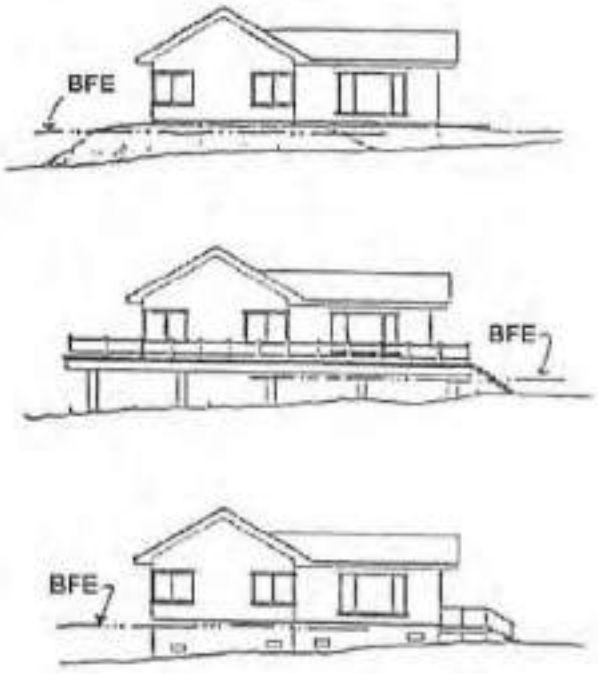



**Figure 31: BFE Examples**

- Requiring all new construction to be elevated one or two feet above the base flood elevation to provide an extra level of protection from waves and higher floods. This extra protection is reflected in a distinct reduction in flood insurance rates.
- Having all developers (not just the larger ones) provide flood data where none are available.
- Specifications to protect foundations from erosion, scour and settling.

- Prohibiting critical facilities from all or parts of the floodplain.
- Prohibiting hazardous materials.
- Requiring buffers adjacent to streams or natural areas.
- Restrictions on use of enclosures below elevated buildings.
- Flood storage lost due to filling and construction must be compensated for by removal of an equal volume of storage.
- The CRS also provides credit for having trained staff and a higher credit if the staff members are Certified Floodplain Managers.

It should be noted that one of the prerequisites for participation in the CRS is that the community be in full compliance with the minimum requirements of the NFIP. A community with a number of "potential violations" risks being removed from the CRS entirely.

Seminole County's Floodplain Ordinance requires that residential construction is built with the lowest floor no lower than one foot above the base flood elevation, which is an extra requirement beyond NFIP's minimum requirements. An additional requirement beyond the minimum for Seminole County is that the ordinance sets specific restrictions on the use of enclosures below elevated buildings.

The County has a total of 8 Certified Floodplain Managers on staff across the Development Services Department, Emergency Management, and Public Works.

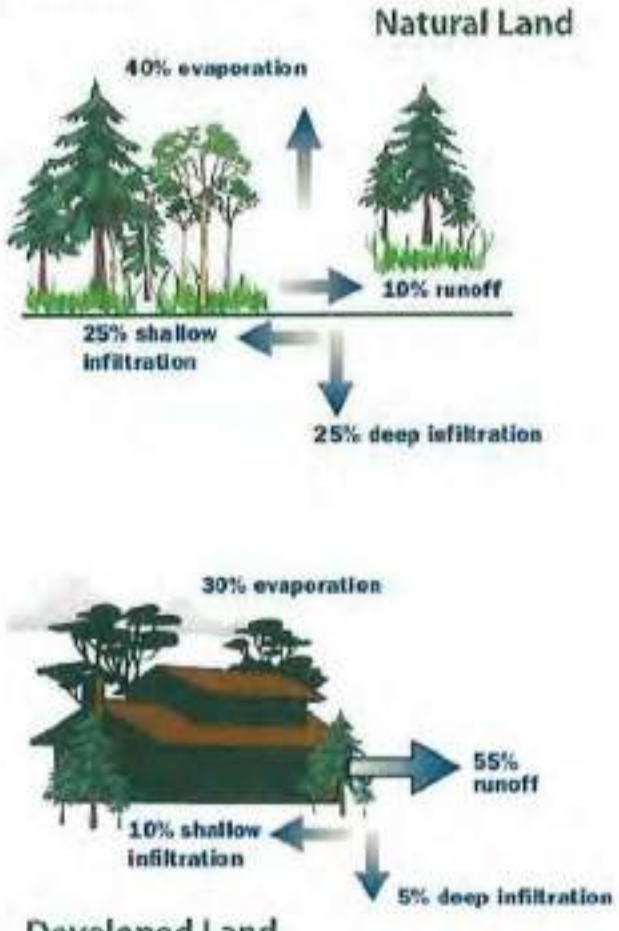
Buffers are required within wetlands to protect the natural and beneficial functions of the floodplain.

Seminole County has a floodplain storage capacity requirement that if fill is brought into a development, an equal amount of fill must be removed somewhere in the floodplain to maintain the floodplain storage capacity.

## 5.6 Stormwater Management

Development in floodplains is development in harm's way. New construction in the floodplain increases the amount of development exposed to damage and can aggravate flooding on neighboring properties. Development outside a floodplain can also contribute to flooding problems. Stormwater runoff is increased when natural ground cover is replaced by urban development (see Figure 34). Development in the watershed that drains to a river can aggravate downstream flooding, overload the community's drainage system, cause erosion, and impair water quality.

**Figure 32: Effect of Development on Stormwater**



There are three ways to prevent flooding problems caused by stormwater runoff:

1. Regulating development in the floodplain to ensure that it will be protected from flooding and that it won't divert floodwaters onto other properties.
2. Regulating all development to ensure that the post-development peak runoff will not be greater than it was under pre-development conditions.
3. Set construction standards so buildings are protected from shallow water.

Many communities participate in the NFIP, which sets minimum requirements for regulating development in the floodplain. The State of Florida has more stringent requirements than the NFIP, including a requirement that all new buildings must be elevated to no lower than one foot above the base flood elevation.

Stormwater runoff regulations require developers to build retention or detention basins to minimize the increases in the runoff rate caused by impervious surfaces and new drainage systems. Generally, each development must not let stormwater leave at a rate higher than what existed under pre-development conditions.

Standards for drainage requirements are typical in subdivision regulations. Standards for storm sewers, ditches, culverts, etc., are best set when an area is laid out and developed. Traditionally, the national standard is to require that the local drainage system carry the 10-year storm. Recently, communities are finding that older estimates of the 10-year storm understated the true hazard, so they are addressing larger storms.

One problem with requiring the drainage system to carry water away is that runoff increases with urban development. The runoff equivalent of a 10-year storm occurs more frequently, and from smaller storms. The problem is just sent downstream onto someone else's property.

Accordingly, modern subdivision regulations require new developments to ensure that the post-development peak runoff will not be greater than it was under pre-development conditions. This is usually done by constructing retention or detention basins to hold the runoff for a few hours or days, until flows in the system have subsided and the downstream channels can accept the water without flooding.

If the storm sewers or roadside ditches cannot handle heavy rain, the standard subdivision design uses the streets to carry excess runoff. If the flows exceed the streets' capacity, adjacent properties will flood. Therefore, the third approach to protecting from stormwater flooding is to make sure new buildings are elevated one or two feet above the street or above adjacent grade.

### 5.6.1 Local Implementation

Seminole County's surface water management standards, outlined in the Public Works Engineering Manual, require developers to manage runoff from new development sites so that post-construction runoff volumes and peak flow rates do not exceed pre-development conditions. This is typically accomplished through on-site retention, infiltration, or controlled release from detention facilities, per the County's established criteria (e.g., pre- vs. post-development hydrology)

The Engineering Manual tailors management strategies based on soil type and hydrologic conditions:

- Pervious soils (A/B): Favor retention and infiltration BMPs to maximize groundwater recharge.
- Impervious soils or high groundwater zones (C/D, A/D, B/D, C/D): Encourage the use of detention basins to attenuate runoff peaks and remove sediments, while promoting natural vegetation follow-through for erosion control

The County strongly encourages Low Impact Development (LID) approaches—such as vegetated swales, rain gardens, and permeable pavements—to reduce the reliance on structural facilities and protect stormwater quality .

Overlay District Requirements

Within the Wekiva River Overlay, development and fill are prohibited in wetlands and the 100-year floodplain, consistent with the Wekiva Parkway & Protection Act.

Within the Econlockhatchee River Overlay, projects must minimize vegetation removal, use native species in landscaping, and ensure that BMP discharge rates for the mean annual (2.3-year, 24-hour) and 25-year storm events do not exceed pre-development levels

Development within 550 feet of the Big or Little Econlockhatchee River channels is prohibited, except for wetland restoration or passive recreational uses.

These provisions support robust floodplain protection and qualify for CRS Activity 430 (Higher Regulatory Standards) credits, enhancing Seminole County's community resilience.

Seminole County's stormwater program is continually updated through the Comprehensive Plan's Drainage Element, which includes annual updates to watershed basin studies, establishment of design storm level-of-service standards, and integration of stormwater needs into the Capital Improvements Program. These ongoing efforts ensure SMP consistency, reduce flood risk, and support compliance with state (SJRWMD) and federal (NPDES, TMDL) requirements.

### 5.6.2 CRS Credit

CRS credit is provided for both higher regulatory standards in the floodplain and stormwater management standards for new developments. Credit is based on how those standards exceed the minimum NFIP requirements.

The Public Works Engineering Manual has the following provisions that would be recognized by the CRS (in addition to provisions discussed in previous sections):

- Standards for retention and detention basis
- Requirements for erosion and sedimentation control

## 5.7 Conclusions

1. Installation of new mobile homes appears to be adequately administered to ensure proper tie downs and flood protection.

2. Most of the comprehensive and land use plans address floodplains and the need to preserve these hazardous areas from intensive development. However, most zoning ordinances do not designate flood prone areas for any special type of land use.
3. Standards in subdivision regulations for public facilities should account for the hazards present at the site. New building sites, streets, and water systems should facilitate access and use by fire and emergency equipment.
4. A percentage of the county's floodplain is open space in public ownership. Because some of the floodplain is still undeveloped and not preserved as open space preventive measures can have a great impact on future flood damages. There are more opportunities to preserve more open space, especially when new developments are proposed.
5. The County's floodplain development and stormwater management regulations exceed minimum national and state standards in many areas and will be helpful in preventing flood problems from increasing.

## 5.8 Recommendations

1. This recommendation is associated with FMP Action Plan Item 3. The County planning and engineering staff should develop for example, subdivision ordinance language that requires new infrastructure to have hazard mitigation provisions, such as:
    a. Buried utility lines and
    b. Storm shelters in new mobile home parks.
2. The County should use every opportunity to preserve floodplain areas as open space or other uses compatible with the flooding hazard. Associated with FMP Action Plan Item 2
3. The County should consider increasing the freeboard requirement by six (6) inches, from one (1) foot above the base flood elevation (BFE) to 1.5 ft. above BFE. FMP Action Plan Item 3.
4. The County should continue to enforce its existing regulations for development and mobile homes and consider other higher standards to further protect the residents of Seminole County. This recommendation is split between FMP Action Plan Items 3 and 7.

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# 6 Property Protection Measures

Property protection measures are used to modify buildings or property subject to damage. Property protection measures fall under three approaches:

- Modify the site to keep the hazard from reaching the building,
- Modify the building so it can withstand the impacts of the hazard, and
- Insure the property to provide financial relief after the damage occurs.

Property protection measures are normally implemented by the property owner, although in many cases technical and financial assistance can be provided by a government agency. These are discussed later in this chapter.

## 6.1 Keeping the Hazard Away

Generally, natural hazards do not damage vacant areas. As noted earlier, the major impact of hazards is to people and improved property. In some cases, properties can be modified so the hazard does not reach the damage-prone improvements. For example, a berm can be built to prevent floodwater from reaching a house.

### 6.1.1 Flooding

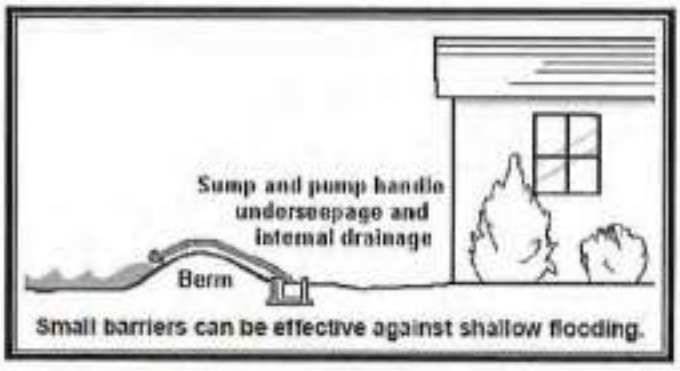
There are five common methods to keep a flood from reaching and damaging a building:

1. Erect a barrier between the building and the source of the flooding.
2. Move the building out of the flood prone area.
3. Elevate the building above the flood level.
4. Demolish the building.
5. Replace the building with a new one that is elevated above the flood level.

### 6.1.2 Barriers

A flood protection barrier can be built of dirt or soil (a "berm") or concrete or steel (a "floodwall"). Careful design is needed so as not to create flooding or drainage problems on neighboring properties. Depending on how porous the ground is, if floodwater stays up for more than an hour or two, the design needs to account for leaks, seepage of water underneath, and rainwater that will fall inside the perimeter. This is usually done with a sump or drain to collect the internal groundwater and surface water and a pump and pipe to pump the internal drainage over the barrier.

**Figure 33: Flood Protection Barrier**



Barriers can only be built so high. They can be overtopped by a flood higher than expected. Barriers made of earth are susceptible to erosion from rain and floodwaters if not properly sloped, covered with grass, and properly maintained. A berm can also settle over time, lowering its protection level. A floodwall can crack, weaken, and lose its watertight seal. Therefore, barriers need careful design and maintenance (and insurance on the building, in case of failure).

### 6.1.3 Relocation

Moving a building to higher ground is the surest and safest way to protect it from flooding. While almost any building can be moved, the cost increases for heavier structures, such as those with exterior brick and stone walls, and for large or irregularly shaped buildings. However, experienced building movers can handle any job.

In areas subject to flash flooding, deep waters, or other high hazard, relocation is often the only safe approach. Relocation is also preferred for large lots that include buildable areas outside the floodplain or where the owner has a new flood-free lot (or portion of the existing lot) available.

### 6.1.4 Building Elevation

Raising a building above the flood level can be almost as effective as relocating it out of the floodplain. When properly elevated, water flows under the structure, reducing or preventing damage to the building and its contents. Elevation is typically less costly and less disruptive to a neighborhood than relocation, and it remains an accepted and effective means of complying with floodplain regulations that require new, substantially improved, and substantially damaged buildings to be elevated above the base flood elevation (BFE).

One consideration with elevation is that it may expose the structure to other hazards. If not adequately braced and anchored, an elevated building may be more vulnerable to high winds and, to a lesser extent, seismic forces. Accordingly, elevation projects must comply with current wind-resistant standards in the Florida Building Code. Seminole County requires that new construction and substantial improvements be elevated at least one foot above BFE, though additional freeboard is recommended. The Seminole County Office of Emergency Management continues to assist property owners in seeking federal and state mitigation funding to support residential elevation projects.

#### Demolition

Some buildings, especially those that have sustained severe or repeated flood damage, are not economically feasible to protect. In these cases, demolition may be the most appropriate solution. Demolition removes the at-risk structure and allows the site to be converted to public open space

or other uses that restore natural floodplain functions. This option is particularly suitable for slab-on-grade or masonry buildings that are difficult to relocate, as well as for structures that are unsafe or significantly deteriorated.

### 6.1.6 Mitigation Reconstruction

If a structure is in poor condition, elevating it may not be feasible or safe. In these cases, an alternative approach known as mitigation reconstruction may be pursued. Under FEMA's Hazard Mitigation Assistance programs—mitigation reconstruction allows the demolition of an existing structure and construction of a new, code-compliant building on the same site. This approach provides long-term resilience by replacing vulnerable structures with buildings that meet or exceed current flood and wind protection standards.

To qualify for federal funding for mitigation reconstruction, several requirements must be met:

- Acquisition or elevation must be demonstrated to be infeasible, based on program criteria.
- The property owner must have owned the structure at the time of the event for which funding is authorized.
- A benefit-cost analysis must show that the project is cost-effective.
- The new building must be elevated at least two feet above the base flood elevation or comply with local freeboard requirements, whichever is higher.
- The new building must meet all applicable floodplain management, wind resistance, and Florida Building Code standards.
- A deed restriction must be recorded requiring the owner to maintain a flood insurance policy in perpetuity.

Federal funding may cover up to 75% of eligible project costs, with no fixed dollar cap; the final award is determined based on project scope and available program funding.

### 6.1.7 Local Implementation

Seminole County has had experience with acquisition, demolition, or elevation to protect buildings from flooding. The County has received HMGP grants from FEMA to manage these programs. The County is currently in the process of removing structures from the floodplain through acquisition-demolition, mitigation reconstructions and elevations.

### 6.1.8 CRS Credit

The CRS provides the most credit points for acquisition and relocation, because this measure permanently removes insurable buildings from the floodplain.

The CRS credits barriers and elevating existing buildings (Activity 530 – Flood Protection). Elevating a building above the flood level will also reduce the flood insurance premiums on that individual building. Because barriers are less secure than elevation, not as many points are provided.

Higher scores are possible, but they are based on the number of buildings removed compared to the number remaining in the floodplain.

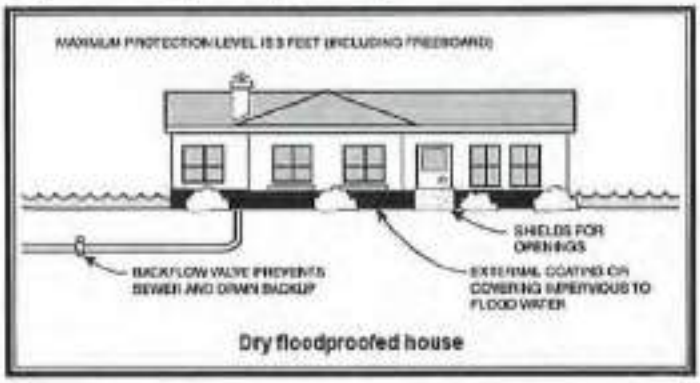
## 6.2 Retrofitting

An alternative to keeping the hazard away from a building is to modify or retrofit the site or building to minimize or prevent damage. There are a variety of techniques to do this, as described below.

### 6.2.1 Dry Floodproofing

Dry floodproofing entails making all areas below the flood protection level watertight. Walls are coated with waterproofing compounds or plastic sheeting. Openings, such as doors, windows and vents, are closed, either permanently, with removable shields, or with sandbags. Dry floodproofing of new and existing nonresidential buildings in the regulatory floodplain is permitted under state, FEMA and local regulations. Dry floodproofing of existing residential buildings in the floodplain is also permitted as long as the building is not substantially damaged or being substantially improved. Owners of buildings located outside the regulatory floodplain can always use dry floodproofing techniques.

**Figure 34: Dry Floodproofing**




Dry floodproofing is only effective for shallow flooding, such as repetitive drainage problems. It does not protect from the deep flooding along lakes and larger rivers caused by hurricanes or other storms.

### 6.2.2 Wet Floodproofing

The alternative to dry floodproofing is wet floodproofing: water is let in and everything that could be damaged by a flood is removed or elevated above the flood level. Structural components below the flood level are replaced with materials that are not subject to water damage. This is the approach used for the first floor of the elevated homes described in the previous section.

For example, concrete block walls are used instead of wooden studs and gypsum wallboard. The furnace, water heater and laundry facilities are permanently relocated to a higher floor. Where the flooding is not deep, these appliances can be raised on blocks or platforms. This practice is not generally used in central and southern Florida where most structures are slab on grade.

### 6.2.3 Local Implementation

It is likely that some properties in Seminole County have been retrofitted to protect them from flooding. However, because these projects are often so small, they generally do not require a building permit and there are no records of them.

### 6.2.4 CRS Credit

Credit for dry and wet floodproofing is provided under Activity 530 – Retrofitting. Because these property protection measures are less secure than barriers and elevation, not as many points are provided.

## 6.3 Insurance

Technically, insurance does not mitigate damage caused by a natural hazard. However, it does help the owner repair, rebuild, and hopefully afford to incorporate some of the other property protection measures in the process. Insurance offers the advantage of protecting the property, as long as the policy is in force, without human intervention for the measure to work.

**Figure 35: Example Flood Insurance Premiums**

| Building Exposure | Premium |
|---|---|
| In the Special Flood Hazard Area (AE Zone) | $1,669 |
| Pre-FIRM ("subsidized") rate | |
| Post-FIRM (actuarial) rates | |
| 2 feet above the base flood elevation | $440 |
| 1 foot above the base flood elevation | $643 |
| At the base flood elevation | $1,167 |
| 1 foot below the base flood elevation | $4,379 |
| | |
| Outside the Special Flood Hazard Area | $1,029 |

Premiums are for $150,000 in building coverage and $75,000 in contents coverage for a one-story house with no basement and a $500 deductible, using the October 2008 Flood Insurance Manual. Premiums include the 5% Community Rating System discount. Premiums are higher for local governments that do not participate in the CRS.

### 6.3.1 Private Property

Although most homeowner's insurance policies do not cover a property for flood damage, an owner can insure a building for damage by surface flooding through the NFIP. Flood insurance coverage is provided for buildings and their contents damaged by a "general condition of surface flooding" in the area.

Most people purchase flood insurance because it is required by the bank when they get a mortgage or home improvement loan. Usually these policies just cover the building's structure and not the contents. Renters can buy contents coverage, even if the owner does not buy structural coverage on the building. According to a 2023 Insurance Information Institute (Triple-I) and Munich Re Consumer Survey, 22 percent of American homeowners reported being at risk of flooding. Of those, 78 percent had flood insurance—35 percent through private insurers and 43 percent through the National Flood Insurance Program (NFIP).

### 6.3.2 Public Property

Governments can purchase commercial insurance policies. Larger local governments often self-insure and absorb the cost of damage to one facility, but if many properties are exposed to damage, self-insurance can drain the government's budget. Communities cannot expect federal disaster assistance to make up the difference after a flood.

Under Section 406(d) of the Stafford Act:

> "If an eligible insurable facility damaged by flooding is located in a [mapped floodplain] ... and the facility is not covered (or is underinsured) by flood insurance on the date of such flooding, FEMA is required to reduce Federal disaster assistance by the *maximum* amount of insurance proceeds that would have been received had the buildings and

contents been fully covered under a National Flood Insurance Program (NFIP) standard flood insurance policy. [Generally, the maximum amount of proceeds for a non-residential property is $500,000.]

[Communities] Need to:

- Identify all insurable facilities, and the type and amount of coverage (including deductibles and policy limits) for each. The anticipated insurance proceeds will be deducted from the total eligible damages to the facilities.
- Identify all facilities that have previously received Federal disaster assistance for which insurance was required. Determine if insurance has been maintained. *A failure to maintain the required insurance for the hazard that caused the disaster will render ineligible for Public Assistance funding...*
- [Communities] *must* obtain and maintain insurance to cover [their] facility – buildings, equipment, contents and vehicles – for the hazard that caused the damage in order to receive Public Assistance funding. Such coverage must, at a minimum, be in the amount of the eligible project costs. FEMA will not provide assistance for that facility in future disasters if the requirement to purchase insurance is not met. – FEMA Response and Recovery Directorate Policy No. 9580.3, August 23, 2000

In other words, the law expects public agencies to be fully insured as a condition of receiving federal disaster assistance.

### 6.3.3 Local Implementation

More properties are insured for flood damages under NFIP in Florida than in any other state. Seminole County participates in the NFIP, which means that NFIP flood insurance is available to residents living anywhere in the unincorporated area. According to the NFIP, in unincorporated Seminole County there were 4,031 NFIP flood insurance policies in effect, for a total of $1,225,662,000 in insurance, as of March 31st, 2025.

**Table 13: Flood Insurance Policies in Seminole County**

| Community Name (Number) | Policies in Force | Total Coverage | Total Written Premium + FPF | Total Annual Payment |
|---|---|---|---|---|
| ALTAMONTE SPRINGS | 854 | $189,679,200 | $475,985 | $590,074 |
| CASSELBERRY | 359 | $91,031,400 | $285,605 | $348,144 |
| LAKE MARY | 225 | $75,498,000 | $148,183 | $187,354 |
| LONGWOOD | 212 | $69,536,000 | $153,053 | $193,563 |
| OVIEDO | 738 | $240,483,400 | $469,000 | $578,704 |
| SANFORD | 635 | $174,076,600 | $431,793 | $544,644 |
| UNINCORPORATED | 4,031 | $1,255,662,000 | $2,626,890 | $3,244,406 |
| WINTER SPRINGS | 640 | $191,974,600 | $503,580 | $610,458 |

**Table 14: Flood Insurance Policies by Occupancy in Seminole County**

| Occupancy | Policies in Force | Insurance in Force | Number of Closed Paid Losses | Value of Closed Paid Losses |
|---|---|---|---|---|
| Single Family | 3,820 | $1,811,705 | 491 | $7,235,605.06 |
| 2-4 Family | 32 | $7,962 | 2 | $0 |
| All Other Residential | 147 | $47,516 | 5 | $0 |
| Non-Residential | 110 | $238,698 | 22 | $591,728.04 |
| Total | 4,109 | $2,105,881 | 520 | $7,827,333.10 |

The number of flood insurance policies by FEMA flood zone is also available, as shown in Tables 15 and 16, below.

**Table 15: Flood Insurance Policies by Flood Zone**

| | Pre-FIRM | | Post-FIRM | | Total | |
|---|---|---|---|---|---|---|
| Zone | Policies in Force | Insurance in Force | Policies in Force | Insurance in Force | Policies in Force | Insurance in Force |
| A Zones | 438 | $109,566,700 | 758 | $200,711,500 | 1,196 | $310,277,200 |
| V Zones | 0 | $0 | 0 | $0 | 0 | $0 |
| X Zones | 635 | $187,758,900 | 2,215 | $704,865,000 | 2,850 | $892,623,900 |

**Table 16: Number and Value of Losses by Flood Zone**

| | Pre-FIRM | | Post-FIRM | | Total | |
|---|---|---|---|---|---|---|
| Zone | Number of Closed Paid Losses | Value of Closed Paid Losses | Number of Closed Paid Losses | Value of Closed Paid Losses | Number of Closed Paid Losses | Value of Closed Paid Losses |
| A Zones | 142 | $3,259,941.30 | 168 | $2,386,105.72 | 310 | $5,646,047.02 |
| V Zones | 0 | $0 | 0 | $0 | 0 | $0 |
| X Zones | 91 | $1,392,710.91 | 109 | $774,486.10 | 200 | $2,167,197.01 |

### 6.3.4 CRS Credit

There is no credit for purchasing flood insurance, but the CRS does provide credit for local public information programs that explain flood insurance to property owners. The CRS also reduces the premiums for those people who do buy NFIP coverage.

## 6.4 The Government's Role

Property protection measures are usually considered the responsibility of the property owner. However, local governments should be involved in all strategies that can reduce flood losses, especially acquisition and conversion of a site to public open space. There are various roles a county or municipality can play in encouraging and supporting implementation of these measures.

### 6.4.1 Government Facilities

One of the first duties of a local government is to protect its own facilities. Fire stations, water treatment plants and other critical facilities should be a high priority for retrofitting projects and insurance coverage. Often public agencies discover after the disaster that their "all-hazard" insurance policies do not cover the property for the type of damage incurred. Flood insurance is even more important as a mitigation measure because of the Stafford Act provisions discussed above. The county's Resiliency Working Group has tracked the completion of wind protection mitigation projects to 12 fire stations unitizing Hurricane Matthew HMGP funding. As of July 2025, Seminole county's government departments have completed 66 mitigation projects using local, state and federal funds totaling over 33.8 million dollars.

| Responsible Agency | Project title | Mitigation project type | Associated hazard | Project cost | Funding category |
|---|---|---|---|---|---|
| Seminole County Public Works | Oregon St and Michigan Ave Drainage Project | Drainage Project | Flooding | $775,500.00 | Other |
| Seminole County Public Safety | Seminole County Alternate EOC Equipment | Structure Retrofit | All Hazards | $1,231,500.00 | Local Funding |
| Seminole County Public Works | Miller Road Culvert | Drainage Project | Flooding | $944,834.00 | Local Funding |
| Seminole County Public Works | Nolan Road Channel | Drainage Project | Flooding | $1,204,055.00 | HMGP - Irma |
| Seminole County Public Works | Lincoln Heights Flood Mitigation | Drainage Project | Flooding | $2,570,000.00 | HMGP |
| Seminole County Sheriff's Office | PSB/EOC Wind Protection | Wind Retrofit | Severe Storms | $46,000.00 | Local Funding |
| Seminole County Facilities | PSB Wind Protection | Wind Retrofit | Severe Storms | $20,000.00 | Local Funding |
| Seminole County Public Safety | Fire Station 12 Wind Protection | Wind Retrofit | Severe Weather | $49,598.00 | HMGP - Matthew |
| Seminole County Public Safety | Fire Station 14 Wind Protection | Wind Retrofit | Severe Weather | $23,818.00 | HMGP - Matthew |
| Seminole County Public | Fire Station 16 | Wind Retrofit | Severe | $38,314.00 | HMGP - |

| | | | | | |
|---|---|---|---|---|---|
| Safety | Wind Protection | | Weather | | Matthew |
| Seminole County Public Safety | Fire Station 22 Wind Protection | Wind Retrofit | Severe Weather | $36,398.00 | HMGP - Matthew |
| Seminole County Public Safety | Fire Station 23 Wind Protection | Wind Retrofit | Severe Weather | $12,890.00 | HMGP - Matthew |
| Seminole County Public Safety | Fire Station 27 Wind Protection | Wind Retrofit | Severe Weather | $38,670.00 | HMGP - Matthew |
| Seminole County Public Safety | Fire Station 34 Wind Protection | Wind Retrofit | Severe Weather | $36,396.00 | HMGP - Matthew |
| Seminole County Public Safety | Fire Station 25 Wind Protection | Wind Retrofit | Severe Weather | $36,000.00 | HMGP - Matthew |
| Seminole County Public Safety | Fire Station 36 Wind Protection | Wind Retrofit | Severe Weather | $0.00 | HMGP - Matthew |
| Seminole County Public Safety | Fire Station 41 Wind Protection | Wind Retrofit | Severe Weather | $0.00 | HMGP - Matthew |
| Seminole County Public Safety | Fire Station 42 Wind Protection | Wind Retrofit | Severe Weather | $0.00 | HMGP - Matthew |
| Seminole County Public Safety | Fire Station 43 Wind Protection | Wind Retrofit | Severe Weather | $36,000.00 | HMGP - Matthew |
| Seminole County Public Works | Red Bug Lake Park Storm Damage Mitigation | Mitigation Reconstruction | Flooding | $32,068.00 | Other |
| Seminole County Public Works | Lake Howell Creek Erosion | Erosion Control | Sinkhole / Land Subsidence | $32,068.00 | Local Funding |
| Seminole County Public Schools | Shelter Sites Generator Protection | Generator | All Hazards | $0.00 | Other |
| Seminole | Weather Radio | Public | All | $0.00 | Other |

| | | | | | |
|---|---|---|---|---|---|
| County Public Safety | Distribution | Information and Warning | Hazards | | |
| Seminole County Public Safety | Public Education Campaign - Prepare Seminole | Public Information / Education | All Hazards | $5,000.00 | Economic Developm ent Grant |
| Seminole County Public Safety | 2656 Shad Lane Flood Mitigation | Mitigation Reconstructio n | Flooding | $325,500.00 | Other |
| Seminole County Public Works | 540 Orange Blvd Sanford Buyout | Aquisition / Demolition | Flooding | $253,832.00 | Other |
| Seminole County Public Safety | Electronic Notification System | Public Information and Warning | All Hazards | $40,000.00 | Other |
| Seminole County Public Safety | Vegetation Reduction Torches | Wildfire Mitigation | All Hazards | $3,095.00 | Other |
| Seminole County Public Works | Mullet Lake Stormwater System | Floodproofing (Non-Elevation) | Flooding | $2,127,034.00 | HMGP - Matthew |
| Seminole County Public Safety | Shutters - Oviedo HS, Lawton Chiles, Hagerty HS, Markham Woods MS | Shelter Retrofit Grant | All Hazards | $831,004.00 | Other |
| Seminole County Public Schools | School Shelters Solar Panel Installation | Safe Room / Shelter | All Hazards | $0.00 | Other |
| Seminole County Public Works | Public Works Admin. Building Window Protection | Structure Retrofit | Severe Weather | $355,168.00 | Other |
| Seminole County Public Safety | School Shelters Window Protection | Shelter Retrofit Grant | Severe Weather | $523,203.00 | HLMP |
| Seminole County Public Schools | SCPS Transportation Facilities Backup Generator | Generator | All Hazards | $175,000.00 | HMGP - Matthew |

| | | | | | |
|---|---|---|---|---|---|
| Seminole County Public Safety | School Shelters Generator, Electrical Engineering, and Wind Protection | Shelter Retrofit Grant | All Hazards | $440,000.00 | HLMP |
| Seminole County Public Works | Oliver Street Reconstruction/Elevation | Drainage Project | Flooding | $283,172.00 | Other |
| Seminole County Public Safety | Critical Facilities (2) Mobile Generators | Generator | All Hazards | $628,132.00 | HMGP - Irma |
| Seminole County Public Safety | School Shelters Wind Protection | Shelter Retrofit Grant | Severe Storms | $717,181.00 | Other |
| Seminole County Public Safety | Public Buildings Car Charging Stations | Electrical | All Hazards | $45,504.00 | Other |
| Seminole County Public Works | Little Wekiva River Restoration | River Restoration | Flooding | $2,072,500.00 | Other |
| Seminole County Public Works | Little Wekiva River Erosion Mitigation | Erosion Control | Sinkhole / Land Subsidence | $283,000.00 | Other |
| Seminole County Volunteer Program | SC Volunteer Program Disaster Plan | Public Information / Education | All Hazards | $5,000.00 | Other |
| Seminole County Stormwater | New Tribes Pond Outfall | Drainage Project | Flooding | $67,000.00 | Local Funding |
| Seminole County Stormwater | Longwood - Lake Mary Road Flood Elimination | Drainage Project | Flooding | $95,000.00 | Local Funding |
| Seminole County Stormwater | Lake Ann Lane | Drainage Project | Flooding | $90,000.00 | Local Funding |
| Seminole County Stormwater | Grade Control Structure #5 | Utility/Infrastructure Protection | Flooding | $139,200.00 | Local Funding |

| | | | | | |
|---|---|---|---|---|---|
| Seminole County Stormwater | Lake Howell Lane - Inundated | Floodproofing (non-elevation) | Flooding | $105,000.00 | Local Funding |
| Seminole County Stormwater | Brisson Ave Cross Drain | Drainage Project | Flooding | $51,000.00 | Other |
| Seminole County Stormwater | SR 436 (11-0503C) | Drainage Project | Flooding | $245,000.00 | Local Funding |
| Seminole County Stormwater | Regrade Ditch North of First Drive | Drainage Project | Flooding | $48,000.00 | Local Funding |
| Seminole County Stormwater | Elder Creek Flood Elimination | Floodproofing (non-elevation) | Flooding | $1,800,000.00 | Other |
| Seminole County Stormwater | Steel Covered Bridge on Little Wekiva | Structure Retrofit | All Hazards | $195,000.00 | Other |
| Seminole County Stormwater | Lockhart-Smith Canal Flood Gauges | Floodproofing (Non-Elevation) | Flooding | $4,000.00 | Other |
| Seminole County Stormwater | Northwestern Ave Bridge Area | Structure Retrofit | All Hazards | $588,084.00 | Local Funding |
| Seminole County Stormwater | Flood Conveyance System Improvements | Drainage Project | Flooding | $625,000.00 | Local Funding |
| Seminole County Stormwater | Navy Canal Flood Attenuation | Floodproofing (Non-Elevation) | Flooding | $1,200,000.00 | Other |
| Seminole County Stormwater | Eastbrook & Wrenwood Heights (Crane Strand) | Drainage Project | Flooding | $7,540,200.00 | Other |
| Seminole County Stormwater | Brisson Av Area Flood Mitigation | Drainage Project | Flooding | $2,700,000.00 | Local Funding |
| Seminole County Public | Winter Springs High Wind Abatement | Shelter Retrofit Grant | Severe Weather | $340,000.00 | HLMP |

| | | | | | |
|---|---|---|---|---|---|
| Schools | Protection | | | | |
| Seminole County Public Schools | Lake Brantley Wind Abatement Protection | Shelter Retrofit Grant | Severe Weather | $310,000.00 | HLMP |
| Seminole County Public Schools | Bentley Elem. Wind Abatement Protection | Shelter Retrofit Grant | Severe Weather | $100,000.00 | HLMP |
| Seminole County Public Schools | Lawton Chiles Middle Wind Abatement Protection | Shelter Retrofit Grant | Severe Weather | $110,000.00 | Other |
| Seminole County Public Safety | Mitigation Coordinator / Grant Writer | Mitigation Reconstructio n | All Hazards | $50,000.00 | Other |
| Seminole County Public Safety | Emergency Shelters Shutters | Shelter Retrofit Grant | Severe Storms | $900,000.00 | Other |
| Seminole County Public Safety | Electronic Notification System / Reverse 9-1-1 | Public Information and Warning | All Hazards | $42,990.00 | Other |
| Seminole County Public Safety | Fire Stations Shutters | Structure Retrofit | Severe Storms | $250,000.00 | HMGP |

### 6.4.2 Public Information

Providing basic information to property owners is the first step in supporting property protection measures. Owners need general information on what can be done. They need to see examples, preferably from nearby. Public information activities that can promote and support property protection are covered in Chapter 10.

### 6.4.3 Financial Assistance

Communities can help owners with financial assistance for a retrofitting project. Financial assistance can range from full funding of a project to helping residents find money from other programs. Some communities assume responsibility for sewer backups, street flooding, and other problems that arise from an inadequate public sewer or public drainage system. Less expensive community programs include low interest loans, forgivable low interest loans and rebates. A forgivable loan is one that does not need to be repaid if the owner does not sell the house for a specified period, such as five years. These approaches don't fully fund the project, but they cost the community less and they increase the owner's commitment to the flood protection project.

Often, small amounts of money act as a catalyst to pique the owner's interest to get a self-protection project moving.

The more common outside funding sources are listed below. Unfortunately, the last three are only available after a disaster, not before, when damage could be prevented. Following past disaster declarations, FEMA and the Florida Division of Emergency Management have provided advice on how to qualify and apply for these funds.

Pre-disaster funding sources:

- FEMA's Flood Mitigation Assistance (FMA) grants (administered by the Florida Division of Emergency Management)
- Community Development Block Grants (administered by the Florida Division of Housing and Community Development)
- The Florida Department of Environmental Protection grant programs
- Conservation organizations, although generally these organizations prefer to purchase vacant land in natural areas, not properties with buildings on them.

**Property Protection Rebates**

The Village of South Holland, Illinois received national recognition for its rebate program to help property owners fund retrofitting projects that protect against surface and subsurface flooding. If a project is approved, installed and inspected, the Village will reimburse the owner 25% of the cost up to $2,500. Over 450 floodproofing and sewer backup protection projects have been completed under this program. Perhaps not surprisingly, contractors have become some of the best agents to publicize this program.

Post-disaster funding sources:

- Insurance claims
- NFIP's Increased Cost of Compliance (ICC). This provision increases flood insurance claim payment (up to $30,000) to help pay for a flood protection project required by code as a condition to rebuild the flooded building. It can also be used to help pay the non-federal cost-share of an elevation project.

Post-disaster funding sources, federal disaster declaration needed

- FEMA's disaster assistance (for public properties). However, the amount of assistance will be reduced by the amount of flood insurance that the public agency should be carrying on the property. (administered by the Florida Division of Emergency Management)
- Small Business Administration disaster loans (for non-governmental properties)
- FEMA's Hazard Mitigation Grant Program (HMGP) (administered by the Florida Division of Emergency Management)

### 6.4.4 Acquisition Agent

The community can be the focal point in an acquisition project. Most funding programs require a local public agency to sponsor the project. The local government could process the funding application, work with the owners, and provide some, or all, of the local share. In some cases, the local government would be the ultimate owner of the property, but in other cases another public

agency, such as Florida State Parks, could assume ownership and the attendant maintenance responsibilities.

### 6.4.5 Mandates

Mandates are considered a last resort if information and incentives are insufficient to convince a property owner to take protective actions. An example of a retrofitting mandate is the requirement that communities have to disconnect downspouts from the sanitary sewer line.

There is a mandate for improvements or repairs made to a building in the mapped floodplain. If the project equals or exceeds 50% of the value of the original building, it is considered a "substantial improvement." The building must then be elevated or otherwise brought up to current flood protection codes.

Another possible mandate is to require less expensive hazard protection steps as a condition of a building permit. For example, many communities require upgraded electrical service as a condition of a home improvement project. If a person were to apply for a permit for electrical work, the community could require that the service box be moved above the base flood elevation or the installation of a separate ground fault interrupter circuits in the basement.

### 6.4.6 Local Implementation

As discussed in Chapter 1, there are many critical facilities, most of which are not subject to flooding and have no requirement for protection from flooding. Public building and critical infrastructure which have completed mitigation projects would be found in 6.4.1.

The Office of Emergency Management assists homeowners with residential flood mitigation projects such as HMGP Elevations, Mitigation reconstructions, or buyout / demolitions. After Hurricane Ian in 2022, the Office of Emergency Management received authorization from the Board of County Commission to pursue and submit 15 residential projects in 2023. The county has assisted homeowners with buyouts and elevations in the past through the FEMA's Flood Mitigation Assistance Program. The Office of Emergency Management ensures continual long-term maintenance and compliance with FEMA / NFIP with those homeowners and properties.

### 6.4.7 CRS Credit

Except for public information programs, the CRS does not provide credit for efforts to fund, provide incentives, or mandate property protection measures. CRS credits are provided for the actual projects after they are completed. However, to participate in CRS, a community must certify that it has adequate flood insurance on all properties that have been *required* to be insured. The minimum requirement is to ensure those properties in the mapped floodplain that have received federal aid, as specified by the Flood Disaster Protection Act of 1973.

## 6.5 Repetitive Loss Properties and Analysis

Chapter 2 explains the criteria for designation of the County's repetitive loss areas. These properties deserve special attention because they are more prone to damage by natural hazards than any other properties in the County. Further, protecting repetitive loss buildings is a priority with FEMA and Florida Division of Emergency Management mitigation funding programs.

Seminole County requests data from the NFIP annually for repetitive loss property data. This data is then generalized to repetitive loss areas within Seminole County.

As of 2025, in unincorporated Seminole County, there are eighty (80) repetitive loss properties. Three (3) properties were previously designated as repetitive losses but have been removed from the list after being mitigated. $3,189,486 of building and contents damage has been incurred in total at these repetitive loss properties, with $11,667,225.11 of the damage having occurred on the unmitigated properties. With a total incorporated Total Premium / Total Net Payment of $29,356,436. A detailed analyses of each repetitive loss area is recommended to further assess the problem within each specific area of concern and provide recommendations for solutions.

Flood insurance policies and paid amounts for repetitive loss properties in Seminole County are shown below in Table 17.

**Table 17: Flood Insurance for Repetitive Loss Properties**

| | A Zones | V Zones | X Zones | Total |
|---|---|---|---|---|
| RL Buildings | 32 | 0 | 8 | 40 |
| RL Losses | 74 | 0 | 19 | 93 |
| RL Total Payments | $2,805,061.07 | $0 | $328,953.04 | $3,134,014.11 |
| Building Payments | $2,433,122.49 | $0 | $248,446.62 | $2,681,569.11 |
| Contents Payments | $371,938.58 | $0 | $80,506.42 | $452,445.00 |

## 6.6 Conclusions

1. There are several ways to protect individual properties from damage by natural hazards. Each funding opportunity is different and are notified on irregular and regular schedules. The advantages and disadvantages of each funding opportunity should be examined for each situation.
2. Property owners can implement some property protection measures at little cost, especially for sites in areas of low hazards (e.g., shallow flooding, sewer backup, and thunderstorms). For other measures, such as relocation and elevation, the owners require considerable financial assistance to mitigate their flood risk.
3. Local government agencies can promote and support property protection measures through several activities, ranging from public information to financial incentives to full funding. Post-event messaging can be just as important as pre-event messaging. This is especially true with HMGP, which becomes available and accessible for homeowner's post-storm.
4. It is unlikely that most government properties, including critical facilities, have any special measures to protect them from flooding.
5. Property protection measures can protect the most damage-prone buildings in the County: repetitive loss properties.

## 6.7 Recommendations

1. Public education materials should be distributed to homeowners, explaining property protection measures that can help owners reduce their exposure to damage by floods and the various types of insurance that are available.
2. Because properties in floodplains will be damaged at some point, a special effort should be made to provide information and advice to floodplain property owners. Special attention should be given to repetitive loss and high hazard areas.
3. All property protection projects should be voluntary. Other than state and federally mandated regulations, local incentives should be positive as much as possible, such as providing financial assistance.
4. Seminole County should evaluate its own properties' vulnerability. A priority should be placed on determining critical facilities' vulnerability to damage and whether public properties are adequately insured.
5. Seminole County should protect its own publicly owned facilities with appropriate mitigation measures.
6. Seminole County should establish cost sharing programs, such as rebates, to encourage low cost (under $10,000) property protection measures on private property, for example:
    - Surface and subsurface drainage improvements,
    - Berms and regrading for shallow surface flooding, and
    - Relocating heating and air conditioning units above the base flood elevation.
7. The County should seek state and federal funding support for higher cost measures, such as elevation, relocation and acquisition of high priority properties. High priority properties are:
    - Those properties in repetitive loss areas.
    - Critical facilities in the floodway or subject to flood depths of more than two feet.

## 6.8 References

1. *Engineering Principles and Practices for Retrofitting Flood Prone Residential Structures*, FEMA, FEMA-259, 2012.
2. *Flood Insurance Agent's Manual*, FEMA, 2000.
3. *National Flood Insurance Policies in Force in Florida by County*, Insurance Information Institute, 2017
4. *Flood Proofing Techniques, Programs and References*, U.S. Army Corps of Engineers National Flood Proofing Committee, 1991.
5. *Homeowner's Guide to Retrofitting: Six Ways to Protect Your House from Flooding*, FEMA, FEMA-312, 3rd Edition 2014.
6. *Local Flood Proofing Programs*, U.S. Army Corps of Engineers, 1994.

# 7 Natural Resource Protection

Resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. These activities enable the naturally beneficial functions of fields, floodplains, wetlands, and other natural lands to operate more effectively. Natural and beneficial functions of watersheds, floodplains and wetlands include:

- Reduction in runoff from rainwater in pervious areas
- Infiltration that absorbs overland flood flow
- Removal and filtering of excess nutrients, pollutants and sediments
- Storage of floodwaters
- Absorption of flood energy and reduction in flood scour
- Water quality improvement
- Groundwater recharge
- Habitat for flora and fauna
- Recreational and aesthetic opportunities

As development occurs, many of the above benefits can be achieved through regulatory steps for protecting natural areas or natural functions. The regulatory programs are discussed in Chapter 5 – Preventive Measures. This chapter covers the resource protection programs and standards that can help mitigate the impact of natural hazards, while they improve the overall environment. Seven areas are reviewed:

- Wetland protection
- Erosion and sedimentation control
- River restoration
- Best management practices
- Dumping regulations
- Urban forestry
- Farmland protection

## 7.1 Wetland Protection

Wetlands are often found in floodplains and depressional areas of a watershed. Many wetlands receive and store floodwaters, thus slowing and reducing downstream flows. They also serve as a natural filter, which helps to improve water quality, and they provide habitat for many species of fish, wildlife and plants.

Wetlands that are determined to be part of the waters of the United States are regulated by the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency (US EPA) under Section 404 of the Clean Water Act. Before a "404" permit is issued, the plans are reviewed by

several agencies, including the Corps and the U.S. Fish and Wildlife Service. Each of these agencies must sign off on individual permits.

There are also nationwide permits that allow small projects that meet certain criteria to proceed without individual permits. Wetlands not included in the Corps' jurisdiction or that are addressed by a nationwide permit may be regulated against by local authorities.

If a permit is issued by the Corps or the County, the impact of the development is typically required to be mitigated. Wetland mitigation can include creation, restoration, enhancement or preservation of wetlands elsewhere. Wetland mitigation is often accomplished within the development site, however, mitigation is allowed off-site and sometimes in another watershed. The appropriate type of mitigation is addressed in each permit.

Some developers and government agencies have accomplished the required mitigation by buying into a wetland bank. Wetland banks are large wetlands created for the purpose of mitigation. The banks accept money to reimburse the owner for setting the land aside from development.

When a wetland is mitigated at a separate site there are drawbacks to consider. First, it takes many years for a new wetland to approach the same quality as an existing one. Second, a new wetland in a different location (especially if it is in a different watershed) will not have the same flood damage reduction benefits as the original one did.

Wetlands in the Lake Jesup Wilderness Area in Seminole County, Florida

## 7.1.1 Local Implementation

Seminole County's Land Development Code includes a Wetlands Overlay Zoning Classification (W-1) that applies to:

- All wetlands of at least 0.5 acres,
- Any smaller wetlands hydrologically connected to larger systems,
- Their adjacent upland buffers.

Disturbance and loss of wetlands are strictly prohibited within the Wekiva River Protection Area (WRPA) and Econlockhatchee River Basin Overlay, regardless of size. Outside these zones, smaller wetlands may be subject to mitigation unless disturbance triggers conservation easement requirements. County permits, along with FDEP Environmental Resource Permits or SJRWMD permits (in Wekiva Basin), are required for any land alteration involving wetland or surface water features.

The Natural Lands Program, initiated in 1990 via voter-supported bonds, preserves ecologically critical lands—including wetlands, floodplains, and buffers. As of 2025, over 7,300 acres of natural lands are under County management, enhancing biodiversity, aquifer recharge, and passive recreation opportunities. In 2023, Seminole County launched the Seminole Forever Program, earmarking at least $5 million annually for acquisitions focused on wetlands, wildlife corridors, and green infrastructure to bolster water quality and flood resilience.

The Comprehensive Plan (Conservation Elements CON 6, FLU Objectives 2.1–2.2) mandates regulatory buffers (minimum 25 ft, increasing to 50 ft within WRPA/Econ zones) and prohibits fill, structural development, and docks in wetlands and the 100-year floodplain within protected areas—except for ecological restoration or public benefit projects with compensatory mitigation.

To support field application and development review, County staff utilize a Wetlands Field Guide and GIS tools usings SJRWMD wetland and floodplain data layers to inform ordinance compliance and environmental assessment

### 7.1.2 CRS Credit

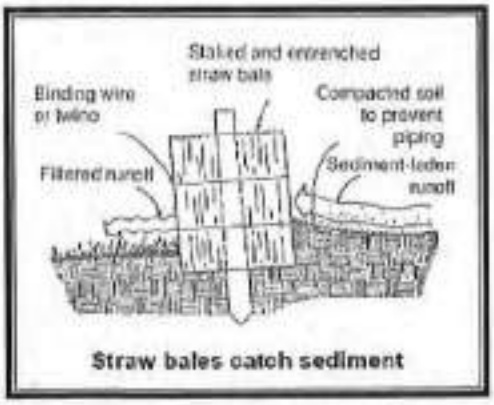
CRS focuses on activities that directly affect flood damage to insurable buildings. While there is no credit for relying on the Corps of Engineers' 404 regulations, there is credit for preserving open space in its natural condition or restored to a state approximating its natural condition. The credit is based on the percentage of the floodplain that can be documented as wetlands protected from development by ownership or local regulations.

## 7.2 Erosion and Sedimentation Control

Farmlands and construction sites typically contain large areas of bare exposed soil. Surface water runoff can erode soil from these sites, sending sediment into downstream waterways. Erosion also occurs along streambanks and shorelines as the volume and velocity of flow or wave action destabilize and wash away the soil.

Sediment suspended in the water tends to settle out where flowing water slows down. This can clog storm drains, drain tiles, culverts and ditches and reduce the water transport and storage capacity of river and stream channels, lakes and wetlands. When channels are constricted and flooding cannot deposit sediment in the bottomlands, even more sediment is left in the channels. The result can be clogged streams and increased dredging costs.

**Figure 40: Straw Bales**




Not only are the drainage channels less able to perform their job, but the sediment in the water reduces light, oxygen and water quality, and often carries chemicals, heavy metals and other pollutants. Sediment has been identified by the US EPA as the nation's number one nonpoint source pollutant for aquatic life.

There are two principal strategies to address these problems: minimize erosion and control sedimentation. Techniques to minimize erosion include phased

construction, minimal land clearing, and stabilizing bare ground as soon as possible with vegetation and other soil stabilizing practices. Best management practices for agriculture activities can also be implemented.

If erosion occurs, other measures are used to capture sediment before it leaves the site. Silt fences, sediment traps and vegetated filter strips are commonly used to control sediment transport. Runoff from the site can be slowed down by terraces, contour strip farming, no-till farm practices, hay or straw bales, constructed wetlands, and impoundments (e.g., sediment basins and farm ponds). Slowing surface water runoff on the way to a drainage channel increases infiltration into the soil and reduces the volume of topsoil eroded from the site.

Erosion and sedimentation control regulations mandate that these types of practices be incorporated into construction plans. They are usually oriented toward construction sites rather than farms. The most common approach is to require applicants for permits to submit an erosion and sediment control plan for the construction project. This allows the applicant to determine the best practices for the site.

### 7.2.1 Local Implementation

Seminole County's Public Works Engineering Manual and Land Development Code continue to mandate strict erosion prevention and sediment control measures:

- Site Plan and Building Permit Requirements: Applications must include detailed plans identifying erosion and sediment control (ESC) measures for all phases of clearing, grading, and construction. These measures must be installed prior to land disturbance and maintained through project completion
- Engineering Division Standards (Section 2.6): The Public Works Engineering Manual specifies that ESC plans are required in all County right-of-way work. Plans must:
    - Detail installation methods and maintenance for sediment barriers and dewatering discharge controls,
    - Ensure weekly inspections and immediate repairs within 24 hours of noticing damage,
    - Incorporate stabilization practices (e.g., seeding, mulching, rolled erosion control products) when construction pauses or ends,
    - Adhere to Florida DEP standards described in the state "Erosion and Sediment Control Design Manual"
- Stormwater Pollution Prevention Plan (SWPPP): Larger County-conducted projects (e.g., roadway drainage improvements) include a SWPPP aligned with NPDES permit requirements. These plans include:
    - Multiple types of sediment barriers (e.g., silt fences, turbidity curtains, sediment basins),
    - Scheduled turbidity monitoring (up to twice daily) during active earthwork,
    - Provisions for non-stormwater discharges (e.g., spills)

### 7.2.2 CRS Credit

Seminole County's Surface Water Management Standards include erosion and sedimentation control provisions and should qualify for 40 points, the maximum credit available.

## 7.3 Lake and Stream Restoration

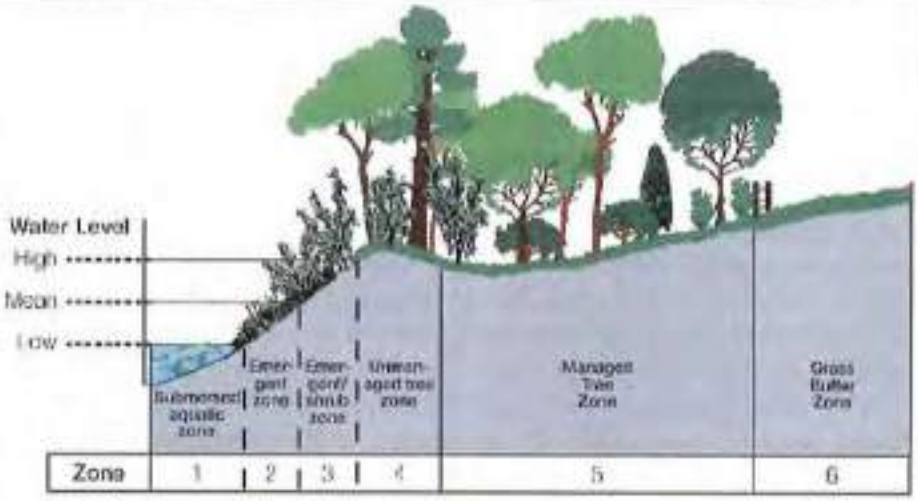
Stream conservation, riparian corridor restoration, lake management, and lake shoreline restoration are all objectives to returning lakes and streams, including adjacent lands, to a more natural condition. Another term is "ecological restoration," which restores native beneficial plants and animals to an area. A key components of these efforts is to use appropriate native plantings along the shoreline of lakes or banks of streams for erosion prevention. This may involve retrofitting the lake shoreline or stream bank with native plantings, installing rolls of landscape material covered with a natural fabric that decomposes after the banks are stabilized with plant roots, or armoring areas with underground structures (such as geofabrics) to conserve sediment and vegetation loss due to erosion. In addition, restoring natural meanders of a streams are integral to reduce water velocity and flow and allow for natural deposition of sediment to occur where decomposition of organics is promoted. These efforts follow the purpose of The Plan to reduce safety hazards, health hazards, and property damage caused by floods.

The Plan fulfills the federal mitigation planning requirements, qualifies for CRS credit, and provides the County with a blueprint for reducing the impacts of these flood hazards on people, property, and public health. In all, restoration to lakes and streams has the following advantages:

- Reduces the amount of sediment and pollutants entering the water
- Reduces harmful algae blooms potential by mitigation nutrients
- Enhances aquatic habitat
- Provides food and shelter for both aquatic and terrestrial wildlife
- Can reduce flood damage by slowing the velocity of water
- Increases the beauty of the land and its property value
- Prevents property loss due to erosion
- Provides recreational opportunities, such as hunting, fishing and bird watching
- Reduces long-term maintenance costs

Studies have shown that after establishing the right vegetation, long-term maintenance costs are lower than if the banks were concrete or a monoculture of grass. The Natural Resources Conservation Service estimates that over a ten-year period, the combined costs of installation and maintenance of a natural landscape may be one-fifth of the cost for conventional landscape maintenance, e.g., mowing turf grass.

**Figure 44: Aquatic and Riparian Buffer Plant Zones**




**Aquatic and riparian buffer plant zones**

Different types of plants are used in different buffer zones along a channel. Zone 1 plants are normally submerged while zone 2 plants are inundated during much of the growing season. Zone 3 plants are water tolerant, but are flooded only during high water. By using the proper plants in each zone, they stabilize streambanks, filter polluted runoff, and provide habitat. *Source: Banks and Buffers – A Guide to Selecting Native Plants for Streambanks and Shorelines*, Tennessee Valley Authority

### 7.3.1 Local Implementation

Seminole County continues to demonstrate leadership in surface water quality and habitat improvement through its Lake Management Program, operated under the Watershed Management Division of the Public Works Department. This program is designed to provide a comprehensive and adaptive approach to lake and stream restoration, emphasizing the protection and enhancement of aquatic ecosystems while mitigating flood risk and improving water quality.

The Seminole County Lake Management Program (SCLMP) applies evidence-based methods to evaluate and manage lakes countywide. It is structured to be technically sound, publicly transparent, and responsive to the ecological challenges facing local water bodies. The program aligns with regional watershed goals and supports the objectives of FEMA's Community Rating System (CRS) Activity 510 by reducing flood damage vulnerability through natural resource protection.

Core Components of the Program Include:

- Biological and Water Quality Assessment
  Detailed diagnostics are performed to assess eutrophication levels, pollutant loadings, and other biological impairments. Water chemistry, chlorophyll levels, and clarity are monitored to track long-term trends.
- Watershed-Scale Assessments
  Comprehensive evaluations of contributing watershed areas are conducted. Land use, impervious surfaces, soils, and hydrology are analyzed to identify pollutant sources and stormwater impacts on lakes and streams.

- Lake Management Plan Development
  Management plans are created based on technical assessments and tailored to the needs of each water body. Plans include goals, objectives, prioritized projects, and recommendations for structural and non-structural interventions.
- Implementation of Restoration Techniques
  The County employs a suite of restoration practices, including:
  - Native shoreline vegetation planting
  - Invasive aquatic plant removal
  - Installation of stormwater treatment technologies
  - Targeted herbicide applications
  - Sediment removal and dredging where appropriate
  - Grass carp stocking and aeration as biological control measures
  - Public education and homeowner technical support
- Best Management Practices (BMPs)
  The SCLMP promotes the adoption of watershed BMPs to reduce non-point source pollution, such as buffer establishment, rain gardens, catch basin maintenance, and the use of pervious surfaces.

Community Participation and Volunteer Engagement

Community involvement remains a cornerstone of Seminole County's lake restoration initiatives. The County coordinates with homeowners' associations, lake advisory committees, and environmental volunteers to support shoreline enhancement and invasive species removal.

Between 2020 and 2024, volunteer activities have contributed an average of:

- 1,787 hours per year of service toward shoreline restoration,
- 31,836 native plants installed annually, and
- 14.84 cubic yards of invasive plant species removed per year.

These metrics reflect strong civic engagement and reduce long-term public maintenance costs while enhancing floodplain resilience.

Institutional Policy Framework

Seminole County's Comprehensive Plan and Land Development Code provide the regulatory framework supporting the protection and restoration of natural water bodies. The County's approach to lake and stream restoration is embedded in local floodplain management strategies and complements the goals of other environmental and stormwater programs, including the National Pollutant Discharge Elimination System (NPDES) compliance and the Watershed Management Master Plan.

All restoration projects are coordinated with state and regional partners, including the Florida Department of Environmental Protection (FDEP) and the St. Johns River Water Management District (SJRWMD), where applicable.

### 7.3.2 CRS Credit

The Community Rating System focuses on activities that directly affect flood damage to insurable buildings. However, there are credits for preserving open space in its natural condition or restored to a state approximating its natural condition. There are also credits for channel setbacks, buffers and protecting shorelines.

## 7.4 Stormwater Best Management Practices

Point source pollutants come from pipes such as the outfall of a municipal wastewater treatment plant. They are regulated by the US EPA and the Florida Department of Environmental Protection. Nonpoint source pollutants come from non-specific locations and are harder to regulate. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, grass clippings, other chemicals, animal wastes, oils from street surfaces and industrial areas, and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches, streams, and lakes.

The term "best management practices" (BMPs) refers to design, construction and maintenance practices and criteria that minimize the impact of stormwater runoff through these management techniques. By mitigating rate/volume of runoff through various recognized BMPs, erosion prevention, natural resource protection, and capturing nonpoint source pollutants (including sediment) can be achieved. BMPs can prevent increases in downstream flooding by attenuating runoff and enhancing infiltration of stormwater. They also minimize water quality degradation causing hazardous algal blooms, preserve beneficial natural features onsite, maintain natural base flows, minimize habitat loss, improve ecological diversity, and provide multiple usages of drainage and storage facilities.

### 7.4.1 Local Implementation

Public Works Engineering Manual – Chapter 2 (Surface Water Management Standards)

- All stormwater systems (public or private) must be designed, constructed, and maintained in accordance with SJRWMD, FDEP, and FDOT criteria
- Standards must align with SJRWMD Rules 40C-4, 40C-40, 40C-41, 40C-42, 40C-44, 40C-400, FDEP Rule 62-25, and FDOT Rule 14-86 FAC. County standards are stricter where they exceed these baseline requirements

MS4 NPDES Permit (FLS000038)

- Seminole County holds a Phase I MS4 permit, which requires an integrated Stormwater Management Program featuring pollution prevention, BMP installation, water quality monitoring, and public education
- The County conducts biological monitoring twice annually at 35 water bodies, reports to FDEP, and supports watershed volunteers via UF/IFAS programs

Construction BMP Enforcement (Ordinances Part 9)

- County Code §270.395–§270.399 prohibits illicit discharges and requires erosion/sediment controls and SWPPPs for land-disturbing activities over one acre
- Enforcement includes inspections, maintenance requirements, and penalties under the Code Enforcement Board — including fines, remediation costs, and liens.

Fertilizer & Illicit Discharge Ordinance

- Seminole County's Fertilizer Ordinance (2017–08; amended 2022–02) prohibits N/P fertilizer use and application during rainy season (June 1–Sept 30), establishes 15-ft fertilizer-free zones near water bodies, and requires Certified Applicators to use slow-release nitrogen

- Part 9 further prohibits pet waste, oil, and illicit connections to storm sewers and authorizes County inspection and corrective enforcement.

### 7.4.2 CRS Credit

Under Activity 450 – Stormwater Management, credit is given for both water quality and water quantity. Water quality credit under activity is given to a community who implements best management practices.

**Figure 45: BMPs and Stormwater**


**BMPs slow stormwater runoff and improve water quality.**

*Source: Living With Wetlands, A Handbook for Homeowners in Northeastern Illinois*

## 7.5 Pollution Regulations

BMPs usually address pollutants that are liquids or are suspended in water that are washed into a lake or stream. Dumping regulations address solid matter, such as shopping carts, appliances and landscape waste that can be accidentally or intentionally thrown into channels or wetlands. Such materials may not pollute the water, but they can obstruct even low flows and reduce the channels' and wetlands' abilities to convey or clean stormwater.

Many cities have nuisance ordinances that prohibit dumping garbage or other "objectionable waste" on public or private property. Waterway dumping regulations need to also apply to "nonobjectionable" materials, such as grass clippings or tree branches, which can kill ground cover or cause obstructions in channels. Regular inspections to catch violations should be scheduled.

Many people do not realize the consequences of their actions. They may, for example, fill in the ditch in their front yard without realizing that is needed to drain street runoff. They may not

understand how regrading their yard, filling a wetland, or discarding leaves or branches in a watercourse can cause a problem to themselves and others. Therefore, a dumping enforcement program should include public information materials that explain the reasons for the rules as well as the penalties.

### 7.5.1 Local Implementation

Seminole County has several ordinances in place that prohibit the pollution of air and water resources, and prevent illegal dumping or illicit discharges that could impact the county's drainage and water quality systems. These ordinances support compliance with federal regulations such as the National Pollutant Discharge Elimination System (NPDES) and the Florida Department of Environmental Protection (FDEP) stormwater requirements. The following summarizes the key ordinances and local efforts:

Chapter 205 – Pollution Control

This ordinance adopts the provisions of the Florida Air and Water Pollution Control Act (Chapter 403, Florida Statutes), as amended. Part 2 of the ordinance specifically prohibits the dumping or discharge of any refuse, pollutants, or effluent into County-owned or maintained drainage ditches or water bodies. This supports the County's floodplain and surface water quality protection initiatives by ensuring that stormwater infrastructure remains unobstructed and that contaminants do not enter the receiving waters.

Chapter 270, Part 9 – Storm Sewer System Discharges

This ordinance governs non-stormwater discharges to the County's municipal separate storm sewer system (MS4). It provides the regulatory framework required by the NPDES permit (FLS000038) and establishes methods for reducing pollutant discharges to the maximum extent practicable.

- Section 270.402 explicitly prohibits illicit discharges and illicit physical connections to the County's stormwater system.
- Section 270.397(a)(1) defines a number of allowable non-stormwater discharges that are exempt from enforcement, including water line flushing, landscape irrigation, air conditioning condensation, and fire-fighting activities.
- The ordinance authorizes the County to conduct surveillance, inspections, monitoring, and enforcement actions including citations, cost recovery, and injunctive relief.

Chapter 270, Part 10 – Stormwater Maintenance (2025 Enhancement)

Part 10 of Chapter 270 expands the County's authority to perform maintenance on stormwater infrastructure, even on private property, when public health or downstream flooding risks exist. This includes inspecting, clearing, and repairing stormwater conveyances to reduce localized flooding and pollutant loads. As of 2025, the County also performs annual inspections of priority stormwater facilities and reports compliance through the FDEP's Stormwater Inspection and Tracking Program.

Chapter 235 – Solid Waste

This ordinance governs solid waste management in Seminole County and specifies that all solid waste must be disposed of at approved County-designated disposal facilities. Unauthorized

dumping or illegal hauling to non-permitted sites is prohibited. This ordinance helps reduce pollutants entering stormwater systems and maintains the aesthetic and environmental quality of unincorporated areas.

Chapter 95 – Health and Sanitation

Under this ordinance, objectionable, unsightly, or unsanitary accumulations of garbage, refuse, junk, debris, or other waste materials are classified as public nuisances when found on private or public property in unincorporated Seminole County. The County may issue notices to remove such nuisances or abate them through enforcement.

Public Education and Reporting Mechanisms

Seminole County implements a proactive educational outreach program to inform residents, businesses, and developers about proper waste disposal practices and the risks associated with illicit discharges. Educational materials are distributed through County websites, public events, and stormwater utility mailings.
In addition, the County offers public reporting mechanisms for water quality and pollution concerns through:

- The Seminole County Water Atlas (www.seminole.wateratlas.usf.edu), which allows users to submit reports of suspicious discharges or illegal dumping.
- A dedicated stormwater hotline and online portal for reporting pollution violations or stormwater infrastructure issues.

Compliance with State and Regional Programs

Seminole County is a partner in the Wekiva Basin Management Action Plan (BMAP), which sets local water quality improvement goals for impaired water bodies within the Wekiva River watershed. As of 2025, the County continues to implement best management practices (BMPs) to meet BMAP nutrient load reduction targets. The County is also subject to Senate Bill 810 (2025), which requires local MS4 permittees to conduct annual stormwater system inspections and report deficiencies and remediation through a centralized tracking platform administered by FDEP.

### 7.5.2 CRS Credit

The CRS provides up to 30 points for enforcing and publicizing a regulation that prohibits du mping in the drainage system. Seminole County should be eligible for this credit.

These ordinances and supporting programs contribute significantly to the County's activities under the Community Rating System (CRS), specifically under:

Activity 450 (Stormwater Management), by establishing and enforcing pollution controls and MS4 protections;

Activity 540 (Drainage System Maintenance), through proactive infrastructure inspection, maintenance authority, and enforcement;

Activity 510 (Floodplain Management Planning), by supporting education, ordinance enforcement, and community pollution reporting.

## 7.6 Farmland Protection

Farmland protection is increasingly recognized in comprehensive planning and zoning across the U.S. Its purpose is to preserve prime, unique, or important agricultural lands and prevent their conversion to non-agricultural uses. Without protective measures, farmland on urban fringes is frequently sold to residential or commercial developers, giving rise to urban sprawl, infrastructure strain, increased stormwater runoff, and higher emergency management demands.

Economic forces drive farmland sales—appraisal pressure often prices parcel as urban land, prompting farmers to sell as marginal agricultural operations become financially unsustainable. Federally, the USDA Farm Bill's Farmland Protection Program (2002, Part 519) provides grants to aid state, tribal, local governments, and nonprofits in purchasing agricultural land easements, prioritizing cropland, rangeland, pastureland, grassland, and forest land within active agricultural operations. These easements help prevent development while maintaining agricultural viability.

The hazard mitigation and environmental benefits of farmland protection mirror those of open-space preservation (see Chapter 5 – Preventive Measures):

- Ensures farmland remains available for future generations;
- Keeps structures out of flood-prone zones;
- Reduces stormwater runoff and improves infiltration;
- Sustains rural economies and ecosystems;
- Maintains scenic vistas and rural character.

### 7.6.1 Local Implementation

Seminole County's Comprehensive Plan includes explicit policies promoting farmland and environmental preservation. The Future Land Use and Conservation elements feature goals such as "Protection and preservation of the environment, including water resources, air quality, regionally significant natural areas, open space and recreational areas"—which inherently encompass agricultural lands.

The East Seminole County Scenic Corridor Overlay District recognizes agriculture as an "important historical, cultural and economic resource," permitting only limited development in scenic rural zones, prioritizing agricultural and designated commercial uses. Landscaped buffers using native species are required to maintain visual and ecological integrity.

Beginning in 2023, Seminole County launched the Seminole Forever Land Acquisition Program (codified in Chapter 190, Part 6, Ordinance No. 2023-17). This initiative, funded via the County's General Fund, mirrors the State's Florida Forever model by proactively acquiring land to conserve natural features, including agricultural open space. Parcels eligible for Seminole Forever consider environmental importance, groundwater recharge areas, biodiversity enhancement, scenic value, and potential to buffer development pressures

In April 2025, the County's Acquisition and Restoration Committee (ARC) scored the High Oaks Ranch—a nearly 700-acre tract of rural farmland—highest among prospective conservation parcels. Recommendations will be presented to the Board of County Commissioners, reflecting active implementation of farmland and rural land protection strategies.

Finally, the County continues to adhere to Florida Statute 163.3177, which mandates that comprehensive plans provide strategies, goals, and programs—including agricultural protection policies—to guide sustainable growth

### 7.6.2 CRS Credit

Credit is given for preserving open space in the floodplain, regardless of why it is being preserved. Credit is also provided for low density zoning of floodprone areas. Agricultural zones that require minimum 10- or 20-acre lots would qualify.

## 7.7 Conclusions

1. A hazard mitigation program can use resource protection programs—such as agricultural preservation and land acquisition efforts—to help protect natural areas and land uses that reduce the impacts of natural hazards.
2. The County's wetland protection, erosion control, and stormwater best management practices (BMPs) continue to meet or exceed state and federal requirements and provide a robust standard of environmental protection.
3. Seminole County's recent investments in the Seminole Forever Land Acquisition Program reflect a strategic commitment to conserving agricultural and environmentally sensitive lands, including properties within the floodplain.
4. The East Seminole County Scenic Corridor Overlay District and relevant Comprehensive Plan policies actively support the preservation of rural and agricultural land uses and help maintain low-impact development in sensitive areas.
5. The County's Code of Ordinances continues to prohibit illicit discharges into state waters and the Municipal Separate Storm Sewer System (MS4), aligning with state and federal water quality protection standards.
6. Preserving farmland—particularly within or adjacent to floodplains—serves as an effective non-structural mitigation strategy by reducing exposure of people and property to flood hazards while supporting ecological and rural character goals.

## 7.8 Recommendations

Seminole County should continue to enforce wetland protection, erosion and sediment control, and stormwater BMP provisions outlined in the Surface Water Management Standards.

The public and policymakers should be informed about the hazard mitigation, water quality, and climate resilience benefits of preserving agricultural land and natural floodplain functions through initiatives such as Seminole Forever.

Seminole County should maintain and publicize its regulations regarding illicit discharges, including those outlined in Chapter 270 of the Code of Ordinances, to strengthen public awareness and compliance.

Educational outreach should continue to highlight the importance of protecting streams, wetlands, lakes, and rural landscapes from dumping, encroachment, and overdevelopment—and should include clear references to applicable codes and conservation programs.

The County should prioritize agricultural preservation efforts near flood-prone areas through coordinated land use planning, overlay districts, and voluntary easement programs that support mitigation goals.

Seminole County should continue evaluating and pursuing acquisition of high-value properties, such as the High Oaks Ranch tract, through Seminole Forever and other funding mechanisms to support long-term resilience, open space preservation, and farmland protection.

## 7.9 References

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*https://www.seminolecountyfl.gov/docs/default-source/pwdocuments/ordinance-2022-02-amending-chapter-19-fertilizer.pdf*

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# 8 Emergency Services Measures

Emergency services protect lives and property during and after disasters. A comprehensive emergency management program encompasses all hazards and integrates departments and jurisdictions throughout the county. At the state level, the Florida Division of Emergency Management (FDEM) oversees emergency service coordination, while Seminole County Office of Emergency Management (OEM) leads local readiness and response through planning, training, and the Emergency Operations Center (EOC).

**Seminole County Office of Emergency Management Mission:**

To foster a prepared and resilient community.

This section organizes measures by chronological emergency phases—from threat recognition to post-disaster recovery.

## 8.1.1 Threat Recognition

Tropical Storms & Hurricanes

- The National Hurricane Center (NHC) continues to issue regular storm forecasts, including model guidance (e.g., spaghetti plots)
- Seminole County maintains redundant monitoring systems through NOAA, local mesonets, and partner agencies, and participates in the NWS StormReady and SKYWARN programs, enabling trained spotters to report severe weather conditions in real time

Floods

- NOAA's Advanced Hydrologic Prediction Service (AHPS) provides forecasts for major waterways. Local rainfall and stream gauges offer supplemental flashflood monitoring in smaller tributaries.
- When stream conditions exceed flood thresholds or heavy rainfall occurs, county staff utilize NOAA Weather Radio All Hazards (SAME code 012117) and local media advisories to notify the public

Severe Weather

- The National Weather Service (NWS) issues watches and warnings for tornadoes, thunderstorms, and other hazards. Seminole County OEM uses SKYWARN spotters and multiple communication channels — including Alert Seminole (text/phone/email), SGTV, and social media — to disseminate alerts immediately upon receipt

Dam Failure

- The County's OEM maintains direct communication protocols with upstream dam operators (e.g., SJRWMD and private reservoirs). Coordination includes routine information exchange and rapid community notification based on reservoir condition thresholds.

Response & Public Notification

- Emergency Operations Center (EOC): Seminole County OEM activates the EOC during hazard events to coordinate multi-agency operations, including public safety, utilities, shelter management, and interoperable communication
- Public Notification Platforms: Information is released through Alert Seminole, SGTV, local media, NOAA Weather Radio, and social media for shelter openings, evacuation zones, and flood safety instructions

Recovery & Mitigation

- After a disaster, OEM leads coordination of post-event assessments, debris removal, and local mitigation actions, including the development of grant-funded projects like FMA, HMGP, and BRIC
- Continuous public outreach educates residents on flood safety—e.g., how to locate Base Flood Elevation data via county maps, elevate utilities, or establish flood prevention measures at home

### 8.1.2 Local Implementation

The Seminole County Office of Emergency Management (OEM) oversees planning, implementation, and coordination of disaster response, recovery, mitigation, risk reduction, prevention, and preparedness activities across the County. OEM conducts comprehensive training, exercises, and stakeholder partnerships to ensure readiness for both natural and human-caused emergencies and operates from a co-located Emergency Operations Center / Emergency Communication Center alongside the E-911/Addressing Division

***Severe Weather:*** Seminole County is recognized as a FEMA StormReady community. OEM leverages National Weather Service radar, SKYWARN spotters, NOAA Weather Radio (SAME code 012117), and Alert Seminole to detect and disseminate timely warnings during thunderstorms, tornadoes, and hurricanes

***Floods:*** The National Weather Service monitors multiple USGS stream and rain gauges—including Wekiva River, St. Johns River, Howell Creek, Gee Creek, and Longwood Rain Gage—to provide real-time stream flow and stage data. These data—available via the AHPS site (water.weather.gov/ahps) and USGS National Water Information System—allow OEM to forecast river levels, issue accurate flood watches/warnings, and deploy flood response measures

***Dam Failure***: No large-scale dams pose downstream risk within County limits or considerable affect Seminole County's waterways, streams or rivers. As a result, dam failure is not treated as a flood threat in County emergency planning protocols.

### 8.1.3 CRS Credit.

Credit can be received for using National Hurricane Center warnings and river flood stage predictions for the National Weather Service's gages. The actual score is based on how much of the community's floodplain is affected by these systems. A total of 75 points is possible under Activity 610 – Flood Warning Program.

## 8.2 Warning

Once the threat recognition system identifies an approaching hazard—whether it's a flood, wildfire, tornado, thunderstorm, or hurricane—the next critical step is alerting the public, staff, and essential facilities. Early and precise warning allows a greater number of individuals and institutions to take protective actions, minimizing potential harm.

Seminole County's Emergency Alert/Warning Systems Operations Annex (within the Comprehensive Emergency Management Plan — CEMP) defines how the Office of Emergency Management (OEM) coordinates alerts and warnings to both stakeholders and the general public.

National Weather Service (NWS) Alert Levels:

- Watch: Conditions are favorable for developing hazards such as flooding, tornadoes, or winter storms.
- Warning: A hazardous event has begun or is imminent (e.g., a tornado touchdown or flash flood).

Local Dissemination Options:

In addition to NWS notices, Seminole County may deliver more specific warnings using multiple methods, including:

- Email notifications and SMS/text alerts (via the Alert Seminole system)
- Local commercial or public radio and television stations
- NOAA Weather Radio broadcasts
- Cable TV emergency news inserts
- Outdoor warning sirens in vulnerable zones
- Public safety vehicle sirens
- Door-to-door notifications in high-risk or at-risk areas
- Social media channels, SGTV streaming, and community message boards

**NOAA Weather Radios**

NOAA Weather Radio is a nationwide network of radio stations that broadcasts warnings, watches, forecasts and other hazard information 24 hours a day. For Seminole County, information comes from transmitters in Melbourne, Florida.

NOAA weather radios can be very effective for notifying people, businesses, schools, care facilities, etc. of weather threats. They have a monitoring feature that issues an alarm when activated by the Weather Service.

To program a new weather radio, the FIPS code for Seminole County is 012117. The channels that broadcast information for Seminole County are 162.4 Mhz (Channel 1) and 162.475 Mhz (Channel 4). You can also listen online, by visiting https://www.weatherusa.net/radio.

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### 8.2.1 StormReady

The National Weather Service established the StormReady program to help local governments improve the timeliness and effectiveness of hazardous weather related warnings for the public.

To be officially StormReady, a community must:

- Establish a 24-hour warning point and emergency operations center,
- Have more than one way to receive severe weather warnings and forecasts and to alert the public,
- Create a system that monitors weather conditions locally,
- Promote the importance of public readiness through community seminars, and
- Develop a formal hazardous weather plan, which includes training severe weather spotters and holding emergency exercises.

Being designated a StormReady community by the National Weather Service is a good measure of a community's emergency warning program for weather hazards. It is also credited by the CRS.

### 8.2.2 Local Implementation

The Office of Emergency Management (OEM) coordinates emergency warning and notifications through a multimodal approach including, but not limited to, NOAA weather radios, Civil Emergency Messages, Emergency Broadcast System, Emergency Alert System, electronic text/media notification, cable interrupt, and reverse calling systems. The Florida Division of Emergency Management also funds a reverse calling system that can be used to send voice, text, and email notifications to residents based on geographic area. In Seminole County, this system is called Alert Seminole.

Alert Seminole is a way for Seminole County residents to sign up for emergency notifications from the Seminole County Emergency Management Agency. Notifications can be sent to a cell phone, pager, or email address.

Officials with the National Weather Service in Melbourne, Florida awarded Seminole County the designation of "StormReady." This nationwide program assesses the capability of a community to receive and disseminate severe weather information. The designation is only granted to those communities that have established a high degree of readiness for natural disasters such as hurricanes, tornadoes and floods.

### 8.2.3 CRS Credit

Community Rating System points are based on the number and types of warning media that can reach the community's floodprone population. Depending on the location, communities can receive up to 25 points for the telephone calling system and more points if there are additional measures, like telephone trees. Being designated as a StormReady community can provide 25 additional points. These credits are in Activity 610 – Flood Warning Program.

## 8.3 Response

The protection of life and property is the most important task of emergency responders. Concurrent with threat recognition and issuing warnings, a community should respond with actions that can prevent or reduce damage and injuries. Typical actions and responding parties include the following:

- Activating the emergency operations center (emergency management),
- Closing streets or bridges (sheriff's office or public works),
- Shutting off power to threatened areas (utility company),
- Passing out sandbags (public works),
- Holding children at school/releasing children from school (school superintendent),
- Opening evacuation shelters (emergency management/ School Board),
- Monitoring water levels (engineering), and
- Establishing security and other protection measures (police/sheriff).

An emergency action plan ensures that all bases are covered and that the response activities are appropriate for the expected threat. These plans are developed in coordination with the agencies or offices that are given the various responsibilities.

Planning is best done with adequate data. One of the best tools is a map that shows which areas would be affected under different conditions. Even though Seminole County is not a coastal County, it may be beneficial to consider developing a map which directs residents to evacuate based on the different hurricane categories.

A flood stage forecast map shows areas that will be under water at various flood stages. Different flood levels are shown as color coded areas, so the emergency management agency can quickly see what will be affected. Emergency management staff can identify the number of properties flooded, which roads will be under water, which critical facilities will be affected, who to warn, etc. With this information, an advance plan can be prepared that shows problem sites and determines what resources will be needed to respond to the predicted flood level.

Emergency response plans should be updated annually to keep contact names and telephone numbers current and to ensure that needed supplies and equipment are still available. They should be critiqued and revised after disasters and exercises to take advantage of the lessons learned and of changing conditions. The end result is a coordinated effort implemented by people who have experience working together so that available resources will be used in the most efficient manner possible.

### 8.3.1 Local Implementation

The Seminole County Emergency Operations Center (EOC) continues to serve as the centralized hub for disaster preparedness, training, response, and recovery activities. Operating under the National Incident Management System (NIMS) framework, the EOC enables strategic coordination across local and regional agencies to protect county residents and property.

Facility and Infrastructure

- Size & Layout: A 3,525 ft² main operations room, with two breakout areas for amateur radio (ARES/RACES) and Seminole Government Television (SGTV) use. Additional rooms include a Policy Room, Joint Information Center (JIC), and a Citizen Information Hotline (3-1-1) call center. These spaces support both operational functions and public information efforts
- Resilience Features: The facility is equipped with dual backup generators, potable water, and shower facilities—ensuring uninterrupted operations during prolonged activations

Staffing & Organizational Structure

- Managed under the Command & General Staff structure, with 20 Emergency Support Functions (ESFs) and a Municipal Branch led by local jurisdictions/interfaces with county departments
- Commonly staffed jointly by OEM, Fire/EMS, E-911, GIS, Public Works, ARES/RACES volunteers, and municipal ESF partners.

Communications & Data Systems

- Equipped with integrated audio-visual systems, GIS-based mapping, real-time traffic camera feeds, interoperable radio systems, satellite communications, and live streaming to SGTV and public platforms
- Staff utilize WebEOC as the primary incident resource management and tracking platform

Co-located EOC / ECC & Emergency Tools

- The EOC is strategically co-located with the Emergency Communication Center, housing the County's E-911 operations and enabling robust interoperable communication across all radio bands

**Flood Response Operations: 2022 & 2024 Events**

**2022 – Hurricane Ian & Nicole Flooding**

- Deployed over 200,000 sandbags countywide to residents in flood-prone areas as a pre-emptive protection measure.
- Some river gauges recorded nearly 26 inches of rainfall in 24 hours, and several streams—including the St. Johns River—remained at flood stage for more than 56 days
- The EOC coordinated critical infrastructure protection by installing a temporary dam around Trauma 2 hospital, and facilitating safe passage for animal care crews to reach the Central Florida Zoo amid severe inundation
- 120 homes remained flooded for over 25 days, and 80+ roadways were submerged for over 40 days, with removal of temporary generators, dumpsters, and boat access points occurring only as access was restored

**2024 – Hurricane Milton & Saturated River Systems**

- Following Hurricane Milton's landfall, OEM pre-positioned emergency vehicles near critical drainage areas anticipating extended flooding of the St. Johns River and its tributaries—particularly near Lake Jesup and Lake Harney

- Sandbag stations were activated (locations publicly announced by 10 a.m.) to support residents along rising waterways. Alert Seminole, SGTV, and county media were used to inform residents
- A FEMA Disaster Recovery Center at Seminole State College supported impacted residents: over 18,000 local applicants, with more than $2.5 million in assistance disbursed

### 8.3.2 CRS Credit

Up to 255 points of credit is available for a fully credited flood warning system. Credit is based on a variety of factors and is cumulative, which includes the previous credits mentioned.

## 8.4 Evacuation and Shelter

In an area subject to the tremendous forces that accompany hurricanes, evacuation is a prime life safety concern. Given the one to two days of lead time provided by the National Hurricane Center, evacuation on a large scale is a realistic lifesaving task. In other situations, such as a tornado, it is safer to keep people where they are rather than expose them to danger from an event that gives little warning.

According to *Emergency Management: Principles and Practice*, "The principle of evacuation is to move citizens from a place of relative danger to a place of relative safety, via a route that does not pose significant danger." There are six key ingredients to a successful evacuation:

- Adequate warning
- Adequate routes
- Proper timing to ensure the routes are clear
- Traffic control
- Knowledgeable travelers
- Care for special populations (e.g., handicapped, prisoners, hospital patients, and schoolchildren)

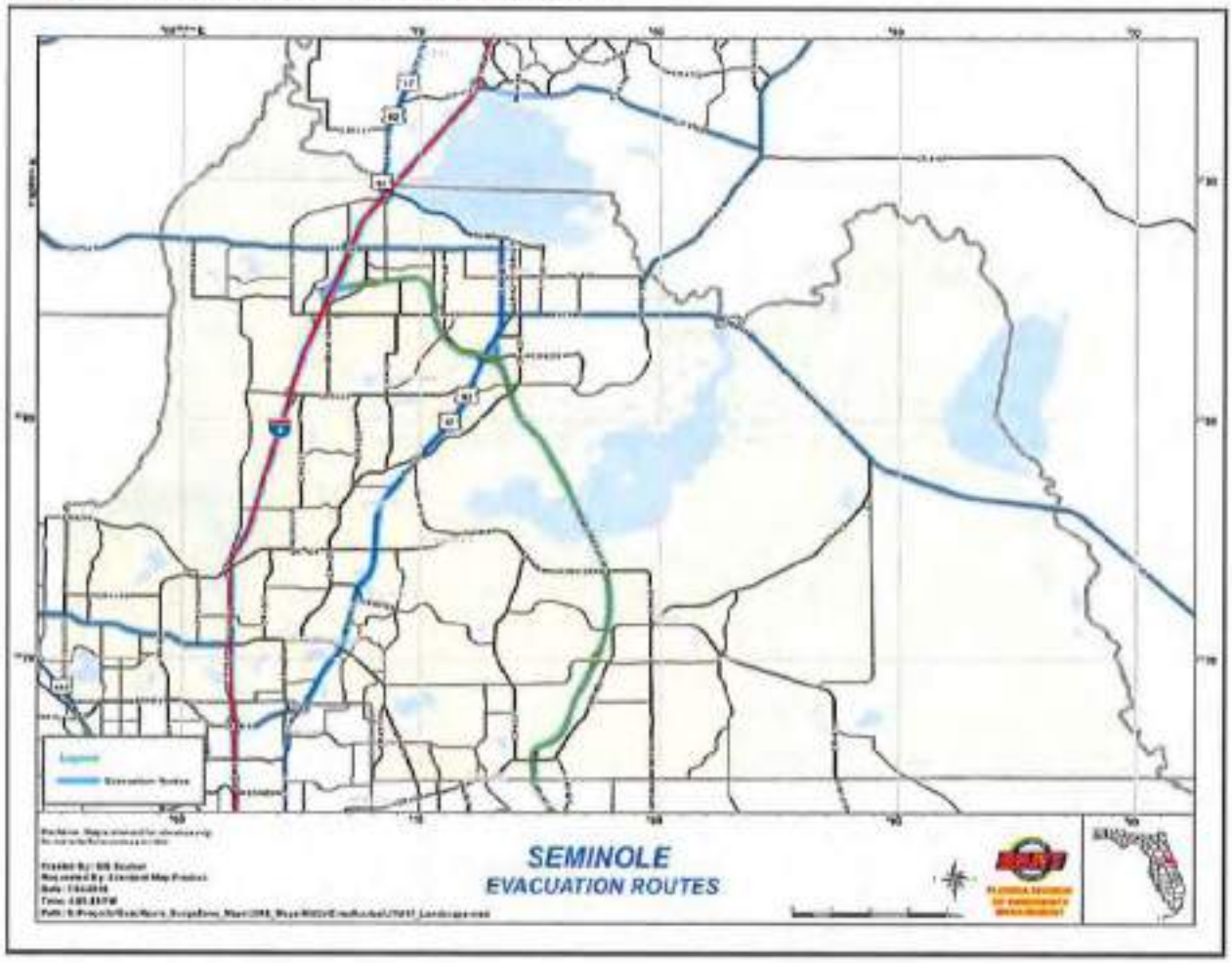
Those who cannot get out of harm's way need shelter. For tropical storms, a stick-built house (not a mobile home) often suffices, but for hurricanes, something sturdier is required. That is why schools so often serve as shelters during a storm as well as a place for those who have lost their homes after the storm.

Seminole County and the School Board of Seminole County will staff a shelter and ensure that there is adequate food, bedding, and wash facilities. Shelter management is a specialized skill. Managers must deal with problems like scared children, families that want to bring their pets in, and the potential for an overcrowded facility.

### 8.4.1 Local Implementation

Evacuation routes for Seminole County are shown in the map below.

**Figure 46: Seminole County Evacuation Routes**




### 8.4.2 CRS Credit

Because it is primarily concerned with protecting insurable buildings, the CRS does not provide any special credit for evacuation or sheltering of people. It is assumed that the emergency response plan would include all necessary actions in response to a flood.

## 8.5 Post-Disaster Recovery and Mitigation

After a disaster, communities should undertake activities to protect public health and safety and facilitate recovery. Appropriate measures include:

- Patrolling evacuated areas to prevent looting,
- Providing safe drinking water,
- Monitoring for diseases,

- Vaccinating residents for tetanus and other diseases,
- Clearing streets, and
- Cleaning up debris and garbage.

Throughout the recovery phase, everyone wants to get "back to normal." The problem is that "normal" means the way they were before the disaster, exposed to repeated damage from future disasters. There should be an effort to help prepare people and property for the next disaster. Such an effort would include:

- Public information activities to advise residents about mitigation measures they can incorporate into their reconstruction work,
- Evaluating damaged public facilities to identify mitigation measures that can be included during repairs,
- Identifying other mitigation measures that can lessen the impact of the next disaster,
- Acquiring substantially or repeatedly damaged properties from willing sellers,
- Planning for long-term mitigation activities, and
- Applying for post-disaster mitigation funds.

### 8.5.1 Regulating Reconstruction

Requiring permits for building repairs and conducting inspections is a critical component of post-disaster recovery in Seminole County. These activities ensure that damaged structures are safe to reenter and meet applicable codes prior to repair. This process is especially important in designated flood hazard areas. Regardless of the cause of the disaster, the National Flood Insurance Program (NFIP) requires communities to enforce substantial damage regulations as a condition of program participation.

Under these regulations, if the cost to repair a structure located in the Special Flood Hazard Area (SFHA) equals or exceeds 50% of the building's market value (excluding land value), the structure is considered substantially damaged. In these cases, the building must be brought into compliance with current floodplain management regulations. For Seminole County, this means the structure must be elevated to or above the Base Flood Elevation (BFE), and meet other applicable design standards outlined in Chapter 30, Part 54 of the Seminole County Code (Floodplain Management Ordinance).

Seminole County utilizes damage assessment procedures in accordance with the Florida Building Code and the local floodplain ordinance to determine substantial damage and to ensure safe and compliant rebuilding. These assessments are performed in coordination with the Building Division, the Office of Emergency Management, and Floodplain Management staff. Properties identified as potentially substantially damaged are flagged for further evaluation and outreach is conducted to guide property owners through the permitting and elevation process.

Post-disaster enforcement of reconstruction regulations can be logistically challenging due to the high demand placed on limited personnel. To address this, Seminole County participates in regional mutual aid agreements that allow certified inspectors from neighboring jurisdictions to assist in the immediate aftermath of a disaster. Additionally, the County has developed pre-

disaster planning documents and Just-In-Time training materials to support efficient deployment of substantial damage determination teams.

Failure to properly enforce reconstruction requirements may jeopardize the County's standing in the NFIP and reduce flood insurance benefits for property owners. As emphasized in Chapter 5 – Preventive Measures, strong enforcement of floodplain reconstruction regulations helps ensure a safer, more resilient recovery process and maintains compliance with both federal and local floodplain standards.

In 2024, the Florida Legislature enacted House Bill 7053, requiring local governments to further integrate resilience planning and post-disaster redevelopment strategies into their Comprehensive Emergency Management Plans. Seminole County has incorporated these requirements into ongoing updates of its Resilient Seminole Initiative and Local Mitigation Strategy to ensure alignment with state mandates and FEMA guidance.

Florida's Senate Bill 180, effective July 1, 2025 (Chapter 2025-190, Laws of Florida), introduces significant mandates affecting rebuilding and post-disaster permitting:

- Post-Storm Permitting Plans: Counties must adopt and annually update a plan—including expedited permit procedures, fee waivers, and identification of frequently requested post-storm permits—published on local government websites by May 1 each year
- Prohibition Periods: For 180 days following a state of emergency, counties may not increase building permit or inspection fees, nor impose new impact fees on like-for-like rebuilds
- Moratorium & Regulation Freeze: Local governments within 100 miles of a hurricane's storm track may not adopt more restrictive or burdensome policies—such as comprehensive plan amendments, land development rules, or moratoriums—on reconstruction for one year following designated storms (e.g., Hurricanes Debby, Helene, Milton). This provision applies retroactively from August 1, 2024 through October 1, 2027
- SB 180 prohibits cumulative substantial damage tracking, meaning local jurisdictions cannot combine past and current damage percentages to assess compliance thresholds under substantial improvement rule

### 8.5.2 Local Implementation

The County's Floodplain Management Ordinance includes the NFIP requirements for determining if a building is substantially damaged. The County's practice is to wait until reconstruction applicants come to the County to request a permit. Repairs that are cosmetic only (for example, replacing flooring, cabinets and painting) do not need permits.

There are no special public information activities to tell people to apply for a permit. Residents interested in a mitigation project funded by the NFIP's Increased Cost of Compliance do apply and request a substantial damage determination.

These practices could potentially permit substantially damaged properties to be repaired without inspection. These practices also mean that the County misses opportunities to inform disaster victims about property protection measures that they can incorporate during repairs.

### 8.5.3 CRS Credit

Seminole County should formally establish post-disaster mitigation polices outlined in this Plan in the section above.

## 8.6 Conclusions

Seminole County utilizes multiple threat recognition systems that provide advance notice of emergencies, including flooding, tropical cyclones, and severe storms. These systems include National Weather Service alerts, hydrologic sensors, and local real-time flood gauges. Recent flood events in 2022 and 2024 demonstrated that early warnings enabled timely Emergency Operations Center (EOC) activations and protective measures such as sandbag distribution, evacuation guidance, and shelter operations.

Additional stream and river gauges, particularly in under-monitored basins, would enhance flood threat recognition and real-time situational awareness, especially in vulnerable and growing communities. Seminole County has made efforts to expand its gauge network in coordination with the U.S. Geological Survey (USGS) and the St. Johns River Water Management District (SJRWMD), though some rural or inland areas remain without real-time monitoring.

The Seminole County Comprehensive Emergency Management Plan (CEMP) and the Local Mitigation and Resiliency Strategy (LMRS) provide multi-hazard guidance, including the Flood Response Annex, which outlines flood-specific response actions such as resource staging, sandbag distribution points, and flood zone outreach. These plans were tested and updated based on operational lessons learned from Hurricane Ian (2022) and the 2024 rain-on-saturated-ground flood event. Both events demonstrated the value of having structured but adaptable response protocols.

There are still gaps in post-disaster inspection guidance and mitigation integration during reconstruction. While Seminole County's Building Division and Floodplain Administrator enforce substantial damage rules in accordance with FEMA and NFIP requirements, the County would benefit from a more formalized strategy to conduct rapid damage assessments and to promote elevation, retrofit, or acquisition during the repair permitting process. Without a standardized countywide post-disaster mitigation inspection program, these opportunities risk being inconsistently captured.

Recent Florida legislation, such as SB 180 (2025), presents both benefits and limitations. It enhances post-disaster permitting timelines and public accessibility to recovery resources but also restricts local flexibility, such as cumulative substantial damage tracking and long-term reconstruction regulations. These constraints may impact the County's ability to fully leverage CRS credit for Activities 510, 520, and 540.

## 8.7 Recommendations

1. Seminole County should conduct a detailed review of its Comprehensive Emergency Management Plan (CEMP), Local Mitigation Strategy (LMS), and associated annexes (e.g., Flood Response Annex, Emergency Alert/Warning Systems Annex) to identify enhancements that align with Community Rating System (CRS) creditable activities,

especially Activities 510 (Floodplain Management Planning), 610 (Flood Warning and Response), and 630 (Dam Safety). These plans should then be submitted for CRS review to receive actionable feedback and identify additional improvements to increase the County's CRS class standing.

2. The County should actively pursue funding opportunities to expand the flood gauge network, particularly in unmonitored or low-coverage basins. Funding options may include the Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance (FMA), U.S. Geological Survey (USGS) partnerships, or direct grants from the St. Johns River Water Management District (SJRWMD). Additional gauges would improve flood forecasting and real-time situational awareness and support Activity 610 CRS credit.
3. Seminole should evaluate and update its evacuation and re-entry procedures to address traffic flow and congestion challenges during large-scale events. This should include coordination with adjacent counties and municipalities, traffic signal control systems, and public information outreach to encourage phased or zone-based evacuations where applicable.
4. The County's Emergency Management, Public Information, Permitting, and Planning Divisions should jointly revise post-disaster procedures to ensure they:
    a. Promote consistent enforcement of substantial damage and reconstruction regulations;
    b. Integrate mitigation opportunities into recovery through elevation, retrofit, or acquisition outreach;
    c. Ensure clear and timely public messaging on reconstruction permitting processes and hazard-related requirements;
    d. Capture and report damage assessment data for future mitigation planning and grant applications.
5. The County should develop a formal Post-Disaster Recovery and Mitigation Strategy, which includes pre-scripted messaging, rapid substantial damage assessment protocols, mutual aid inspection plans, and prioritized mitigation project identification. This will enhance post-disaster efficiency and improve CRS credit for Activities 510, 520 (Repetitive Loss), 530 (Flood Protection), and 610.
6. The County should closely monitor state legislation impacting local reconstruction authority, such as SB 180 (2025), and advocate for amendments or administrative strategies that preserve the County's ability to enforce cumulative substantial damage tracking and promote resilient redevelopment practices.

## 8.8 References

CRS Coordinator's Manual, FEMA, 2021.
https://crsresources.org/manual/
*Latest version of the primary CRS guidance used to determine creditable emergency service activities, including flood response (Activity 610), warning systems, and post-disaster recovery coordination.*

CRS Credit for Flood Warning and Response, FEMA, 2023.
https://crsresources.org/files/100/fema-activity-610-guidance-2023.pdf
*Updated FEMA technical guidance focused specifically on CRS Activity 610: Flood Warning and Response, including best practices for alert systems, gauge integration, and threat recognition systems.*

Florida State Emergency Response Plan (SERP), Florida Division of Emergency Management (FDEM), 2022.
https://www.floridadisaster.org/dem/serp/
*Describes statewide coordination protocols, mutual aid, and ESF structures relevant to Seminole County's integration of Emergency Support Functions in the EOC.*

Seminole County Comprehensive Emergency Management Plan (CEMP), 2024 Update.
https://www.seminolecountyfl.gov/your-government/emergency-management/plans.stml
*Includes the Flood Response Annex and Emergency Alert/Warning Systems Operations Annex. Details protocols for disaster response, notifications, and damage assessments.*

Guide for All-Hazard Emergency Operations Planning (SLG-101), FEMA, 1996 (still in effect).
https://www.fema.gov/pdf/plan/1-ch.pdf
*Foundational framework for emergency planning still referenced in modern emergency operations plans.*

NOAA Weather Radio All Hazards (NWR) – National Weather Service, Updated 2024.
https://www.weather.gov/nwr
*Details NOAA's nationwide alerting and weather radio system, a key part of Seminole County's multi-modal alert system.*

FEMA Damage Assessment Operations Manual, FEMA P-154, 2022.
https://www.fema.gov/sites/default/files/documents/fema_damage-assessment-operations-manual_2022.pdf
*Covers protocols for post-disaster damage assessments, including substantial damage determinations used in floodplain management.*

Florida Senate Bill 180 (2025 Session) – "An act relating to local government actions after natural disasters."
https://www.flsenate.gov/Session/Bill/2025/180
*This bill affects how local governments like Seminole County regulate reconstruction following declared disasters, especially in mapped floodplains.*

# 9 Structural Project Measures

Flood control projects have traditionally been used by communities to control or manage floodwaters. They are also known as "structural" projects that keep flood waters away from an area as opposed to "non-structural" projects, like retrofitting, that do not rely on structures to control flows.

## 9.1 Flood Control Measures

Four general types of flood control projects are reviewed here: levees, weirs, reservoirs, diversions, and dredging. These projects have three advantages not provided by other mitigation measures:

- They can stop most flooding, protecting streets and landscaping in addition to buildings,
- Many projects can be built without disrupting citizens' homes and businesses, and
- They are constructed and maintained by a government agency, a more dependable long-term management arrangement than depending on many individual private property owners.

However, as shown below, structural measures also have shortcomings. The appropriateness of using flood control depends on individual project area circumstances.

**Pros and Cons of Structural Flood Control Projects**

| Advantages | Disadvantages |
|---|---|
| They may provide the greatest amount of protection for land area used. | They can disturb the land and disrupt the natural water flows, often destroying wildlife habitat. |
| Because of land limitations, they may be the only practical solution in some circumstances. | They require regular maintenance, which if neglected can have disastrous consequences. |
| They can incorporate other benefits into structural project design, such as water supply and recreational uses. | They are built to a certain flood protection level that can be exceeded by larger floods, causing extensive damage. |
| Regional detention may be more cost-efficient and effective than requiring numerous small detention basins. | They can create a false sense of security, as people protected by a project often believe no flood can ever reach them. |
| | Although it may be unintended, in many circumstances they promote more intensive land use and development in the floodplain. |

### 9.1.1 Levees, Weirs, and Floodwalls

Among the most recognized structural flood control measures are levees and floodwalls—barriers constructed of earth or concrete designed to separate floodwaters from the properties they threaten. A levee is an engineered earthen embankment constructed parallel to a river or stream, while a floodwall is a vertical structure, typically made of concrete or steel, used where space is limited.

A weir is a low dam built across a river or stream to regulate water levels upstream. Weirs have historically been used to control flow rates without the intent of long-term water storage, unlike reservoirs. In practice, weirs manage water levels for ecological, flood control, or urban water management purposes. In Seminole County, weirs are in use on several waterways, including Soldier's Creek, Howell Creek, and Lake Sylvan.

Levees and floodwalls function by confining floodwaters to the existing channel, but they must be carefully designed to withstand overtopping, internal seepage, and scouring. While such structures may reduce damages during more frequent, lower-magnitude flood events, they can exacerbate impacts during extreme events if overtopped or breached, potentially leading to catastrophic consequences. It is critical that these measures be evaluated comprehensively to avoid unintended harm.

Key considerations in the evaluation of levees include:

- Design and permitting costs,
- Right-of-way acquisition,
- Compensatory storage requirements to offset displaced floodplain volume,
- Internal drainage infrastructure to manage runoff trapped behind the levee,
- Construction and long-term maintenance costs,
- Wetland and habitat impact mitigation,
- Loss of visual and physical river access,
- The potential for a false sense of security in levee-protected areas,
- Adverse effects to adjacent and downstream properties due to redirected flood flows.

Setback levees—constructed at a distance from the immediate streambank—are preferred when feasible. These reduce environmental impacts and create opportunities for dual-purpose use, such as open space, passive recreation, or habitat corridors. As of 2025, no levees have been constructed in Seminole County, though the concept may be explored for future projects requiring protection of critical infrastructure.

Weirs, while useful, can cause upstream flooding during high flow events and tend to accumulate sediment and debris. These characteristics can degrade aquatic ecosystems if not managed properly. Careful design and routine maintenance are required, especially when used in areas with high sediment loads or floating debris.

Floodwalls provide similar protection to levees but occupy less surface area due to their vertical design. However, their cost and engineering complexity often limit their use to urban settings with significant at-risk assets. They also displace erosive energy to downstream areas and can

fragment natural shoreline and wetland systems. One example in Seminole County is the floodwall incorporated into the City of Sanford's Riverwalk along Lake Monroe, which provides protection for the adjacent roadway and commercial district.

Seawalls, typically used in coastal areas, are vertical retaining walls designed to protect shorelines from wave-induced erosion. Though effective at reducing direct erosion, they often cause increased erosion on adjacent, unprotected properties and interfere with natural sediment transport. Due to these unintended effects, seawalls are discouraged and in some cases prohibited by federal, state, or local policy, including provisions in Florida's Coastal Construction Control Line (CCCL) regulations.

In alignment with both the Seminole County Comprehensive Plan and the Local Mitigation Strategy, structural measures are only considered when non-structural or nature-based alternatives are not feasible or cannot adequately protect critical facilities or existing development. The County continues to prioritize approaches that minimize environmental impacts and promote long-term resilience.

### 9.1.2 Reservoirs and Detention

Reservoirs and detention basins help reduce flooding by temporarily storing excess stormwater runoff during heavy rainfall events. These systems lower downstream flood stages by holding floodwaters behind a dam or within a basin until the flood peak has passed, after which the stored water is gradually released or pumped out at a controlled rate the receiving water body can handle safely.

Reservoirs may be dry most of the time, only filling during significant rainfall events, or they may be designed as permanent water features such as lakes or ponds. When designed as lakes, these features can offer additional community benefits such as recreational opportunities or supplemental water supply, which may also aid drought mitigation.

Flood control reservoirs are generally constructed for one of two purposes:

- Large reservoirs are built to protect developed areas already experiencing flood risk.
- Smaller detention basins are typically used to manage stormwater runoff from new development and to prevent downstream impacts.

Regardless of size, reservoirs primarily serve to protect areas located downstream of the structure. Unlike levees and channel modifications, they do not need to be located immediately adjacent to the properties they protect and can be sited to minimize environmental disruption. They are most effective in deep valleys or upstream areas of smaller watersheds where storage capacity is more feasible.

In urban areas, detention basins often take the form of manmade excavations located near—but usually outside—the regulatory floodplain. These basins are designed without traditional dams, thereby eliminating dam failure hazards. Both wet (permanent pond) and dry (temporary storage)

basins can serve multiple functions, including recreational use, aesthetic improvement, and open space preservation. This multifunctional design can help Seminole County earn CRS credit under Activity 430 – Higher Regulatory Standards and Activity 540 – Drainage System Maintenance.

Key considerations when evaluating reservoirs and detention basins include:

- Risk of downstream flooding in the event of dam failure (if the facility includes a dam),
- Ongoing costs associated with maintenance, vegetation management, sediment removal, and inspection,
- Reduced effectiveness during events that exceed the facility's design storm level,
- Sedimentation over time, which may reduce storage capacity and require periodic dredging or restoration,
- Potential impacts to water quality, including increased water temperature and altered nutrient and oxygen levels, particularly in long-retention or poorly aerated ponds, and
- The potential for upstream backwater flooding if in-stream reservoirs are not designed with sufficient hydraulic consideration.

There are multiple dry and wet detention basins in Seminole County constructed to meet stormwater retention and treatment requirements outlined in the Land Development Code Chapter 40 – Drainage and Stormwater Management. These basins serve to mitigate both flooding and water quality impacts, in line with Florida Department of Environmental Protection (FDEP) and St. Johns River Water Management District (SJRWMD) permitting requirements.

### 9.1.3 Diversion

A diversion is a structural flood mitigation measure that reroutes excess floodwaters away from flood-prone areas by creating an alternate flow path. Diversions are designed to reduce flooding along the original watercourse by conveying high flows to a less vulnerable receiving body, such as a nearby river, lake, or stormwater system. This is typically achieved using constructed surface channels, overflow weirs, or tunnels.

During normal conditions, flow is contained within the existing stream or channel. When flood conditions arise, excess water is redirected through the diversion structure to reduce pressure and lower flood stages in the original channel. The goal is to safely relocate floodwaters to areas where they will cause minimal or no damage.

While diversions can be effective, they are highly constrained by local topography and land use patterns. For a diversion to be cost-effective and technically feasible:

- The receiving water body must be relatively close and capable of handling the additional flow volume,
- The intervening land must have a suitable gradient for gravity flow and be available for construction, ideally undeveloped or publicly owned,
- The project must avoid shifting flood risk to other areas, particularly downstream or in environmentally sensitive zones.

Due to these constraints, diversions are generally more feasible in rural or semi-developed areas where land is available and where receiving basins (such as lakes or large floodplain rivers) are nearby.

In Seminole County, there are no major diversion structures currently in place, but small-scale flow redirection techniques (e.g., overflow weirs and bypass ditches) are employed within stormwater infrastructure systems managed by the Public Works Department and the Watershed Management Division. These systems are guided by design standards in Chapter 40 of the Seminole County Land Development Code, which emphasizes protection of natural conveyance systems and minimization of downstream impacts.

### 9.1.4 Dredging

Dredging is sometimes proposed as a conveyance improvement to reduce flooding by increasing the depth of a waterway and improving its capacity to carry stormwater. However, dredging is rarely a viable or sustainable flood control strategy due to several significant limitations:

- Minimal impact on flood elevations: Given the volume and velocity of floodwaters during significant rainfall events, removing one or two feet from the bottom of a stream channel has a negligible effect on overall flood heights. Hydraulic models often show limited benefits in flood reduction unless very large-scale excavation is undertaken.
- High cost and disposal challenges: Dredging is expensive, particularly when contaminated sediments or large volumes must be managed. Disposal of dredged material requires suitable, permitted locations and often long-distance transport, adding to the project's overall cost.
- Temporary effectiveness: Without comprehensive upstream erosion control and sediment management, dredged channels quickly fill in again due to natural sediment deposition. This often requires repeated maintenance dredging within a few years, which compounds cost and environmental disruption.
- Ecological impacts: Undisturbed stream channels typically support diverse aquatic and riparian ecosystems. Dredging disturbs or destroys this habitat, degrading water quality, eliminating aquatic life, and altering the stream's natural hydrology.

Due to these impacts, federal regulations require a permit from the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act before dredging activities can commence. This permitting process includes environmental review and consultation under the National Environmental Policy Act (NEPA) and the Endangered Species Act (ESA), and may take several months or longer to complete. Additional permits from the St. Johns River Water Management District (SJRWMD) and Florida Department of Environmental Protection (FDEP) are also typically required.

In Seminole County, dredging is not widely used as a flood mitigation strategy due to its limited long-term effectiveness and environmental concerns. Instead, the County prioritizes non-structural measures such as preservation of natural floodplains, green infrastructure, streambank

stabilization, and maintenance of existing conveyance systems through vegetative management and debris removal.

To the extent that limited dredging may be necessary for specific maintenance or navigation concerns, those activities are guided by Chapter 40 of the Seminole County Land Development Code and subject to strict environmental review and coordination with federal and state agencies.

### 9.1.5 Channelization

Channelization has historically been a widely used approach to address local drainage and flood concerns. This method involves straightening, deepening, and/or widening a natural stream or river channel to increase conveyance capacity and move stormwater more quickly through an area.

However, channelization presents several critical drawbacks, especially when evaluated against modern best practices in floodplain management and natural systems protection:

- Increased downstream flood risk: While channelization may reduce localized flooding by accelerating water flow through a specific area, it often worsens flooding downstream by delivering higher volumes of stormwater at faster velocities. This can overwhelm downstream systems and exacerbate floodplain impacts.
- Flashier hydrology and degraded water quality: Channelized streams rise and fall more rapidly. During dry conditions, the artificially deepened channel holds less baseflow, resulting in lower water levels, warmer water temperatures, and reduced dissolved oxygen. These conditions degrade aquatic habitat and can lead to poor water quality, especially in urban environments with nonpoint source pollution.
- Increased erosion and instability: Straightened and deepened channels often have unnatural flow velocities that cause bank erosion, channel incision, and sedimentation problems. Over time, these channels may become unstable and require repeated dredging, bank stabilization, or reconstruction—creating a cycle of costly maintenance.

Despite these issues, when channel modifications are properly designed with ecological and hydraulic considerations, they can provide more sustainable outcomes. For example, vegetated swales, bioengineered channels, and natural channel design techniques can maintain conveyance while also enhancing water quality, reducing erosion, and improving habitat.

In Seminole County, the use of large-scale channelization is generally not recommended as a flood control solution except in limited, site-specific circumstances where no viable alternatives exist. County policy instead favors preservation and restoration of natural channels, implementation of Low Impact Development (LID) practices, and use of green infrastructure to manage stormwater at its source.

Channel maintenance efforts within the County prioritize non-invasive measures, including the clearing of blockages and selective vegetation management, in accordance with Florida Department of Environmental Protection (FDEP) and St. Johns River Water Management District (SJRWMD) permitting requirements.

### 9.1.6 CRS Credit

Structural flood control projects that provide 100-year flood protection and that result in revisions to the Flood Insurance Rate Map are not credited by the CRS in order to avoid duplicating the larger premium reduction provided by removing properties from the mapped floodplain.

The CRS credits smaller flood control projects that meet the following criteria:

- They must provide protection to at least the 25-year flood,
- They must meet certain environmental protection criteria,
- They must meet federal, state and local regulations, such as the Corps of Engineers' 404 permit and Florida dam safety rules, and
- They must meet certain maintenance requirements.

These criteria ensure that credited projects are well-planned and permitted. Any of the measures reviewed in this section would be recognized under Activity 530 – Flood Protection, although it would be very hard to qualify a dredging project. Credit points are based on the type of project, how many buildings are protected, and the level of flood protection provided.

### 9.1.7 Local Implementation

Seminole County has evaluated and implemented several structural projects to address localized and regional flooding concerns, with a focus on enhancing conveyance, protecting critical infrastructure, and reducing flood risks for residential areas. These efforts are coordinated with state and federal partners and are guided by the goals outlined in the County's Local Mitigation and Resileincy Strategy (LMRS) and Floodplain Management Plan (FMP).

One of the County's long-standing structural initiatives is the Mullet Lake Road Stormwater Improvement Project, designed to address flooding in the St. Johns River and Lake Harney Basins. This area of eastern Seminole County includes a drainage basin of approximately 2,890 acres (4.5 square miles). Residents in the Mullet Lake Park Road area have historically experienced recurrent yard and structural flooding during moderate to heavy rainfall events.

The initial drainage study, completed in 2006, identified two primary causes of the persistent flooding:

- Inadequate conveyance capacity in the existing infrastructure, and
- Accumulation of upstream runoff, which overwhelms the downstream system.

While the project was originally delayed due to grant eligibility constraints, Seminole County has since pursued phased implementation. The County has continued to seek Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) funding, along with Florida Department of Environmental Protection (FDEP) cost-share opportunities, to move the project forward.

As of 2025, the project remains in the pre-construction phase, with design and permitting underway for key drainage improvements, including culvert upgrades, ditch regrading, and the potential addition of detention features to mitigate peak runoff volumes and improve

conveyance. These improvements are expected to directly reduce flood risk for dozens of residential properties and help the County meet CRS Activity 530 (Drainage System Maintenance) and Activity 540 (Drainage Improvements) credit criteria.


Estimated at more than $26M in proposed improvements, the Midway Drainage Improvement Project will transform the community. Flooding has been a concern in the Midway community for years. During the recently completed basin study, residents shared their experiences and concerns and helped the County identify specific locations prone to flooding.

New stormwater management facilities and additional and upsized stormwater collection and conveyance systems will be constructed throughout the Midway Basin. Additionally, a new sidewalk will be constructed along Main Street from Sipes Avenue to Beardall Avenue. The project will reduce flooding and improve water quality in the Midway Community as well as provide sidewalk for pedestrian safety along Main Street. The project is currently in the design phase.

In addition to this effort, Seminole County Public Works has completed the following recent structural flood mitigation projects that align with the objectives of this plan:

- Soldier Creek Regional Stormwater Facility (2022–2024): This multi-phase project improved flood attenuation and water quality treatment capacity for runoff entering Soldier Creek, benefiting both flood-prone neighborhoods and the downstream aquatic environment. It incorporated best management practices (BMPs) that support CRS credit for natural channel protection.

- Howell Creek Watershed Improvements – Phase I (Completed 2023): Included upgrades to outfalls and culverts, as well as the addition of a new regional detention basin to mitigate stormwater impacts in a rapidly developing urban corridor.
- Lake Harney Road Drainage Improvements (In Progress): Under design as of 2025, this project will include regraded ditches and upgraded driveway culverts to enhance outfall capacity in this repeatedly flooded area, which was impacted during Hurricane Ian in 2022.

Seminole County continues to evaluate new project opportunities annually through the Resiliency Working Group, prioritizing those that provide the greatest cost-benefit ratio, support floodplain management goals, and can leverage available state and federal mitigation funding. Projects that incorporate multi-use open space, natural channel restoration, or green infrastructure elements are prioritized to both reduce flood risk and support CRS Activity 420 (Open Space Preservation) and Activity 510 (Floodplain Management Planning).

## 9.2 Conclusions

- Seminole County should continue to require on-site retention and detention systems for all new development and redevelopment to ensure post-development runoff does not exceed pre-development conditions. This practice remains critical for protecting the downstream drainage system from being overloaded, supporting compliance with the County's Land Development Code and stormwater management goals, and contributing to long-term flood risk reduction.
- Regional stormwater facilities—particularly upper watershed retention and detention basins—should be more actively considered and pursued to reduce downstream conveyance burdens and manage cumulative impacts of development. These types of projects can provide significant flood attenuation benefits and can be prioritized through updates to the Local Mitigation Strategy and Stormwater Master Plan. When designed to include multi-functional open space or natural system restoration, they may also support CRS credit under Activities 420 and 530.
- Levees and floodwalls are generally not feasible or appropriate flood control strategies for Seminole County due to topographic constraints, high cost, and the extensive maintenance requirements associated with these structures. Most areas in need of flood protection are located on or adjacent to private property, which presents significant challenges in terms of access, easements, permitting, and long-term upkeep. Furthermore, these measures pose residual risk from overtopping or failure during extreme events, which can increase downstream damages.
- Channel improvements should be evaluated cautiously, with both the short-term benefits of improved conveyance and the long-term costs and environmental impacts considered. While some localized channel maintenance or regrading may offer flood relief, poorly designed or overly aggressive channelization can increase downstream erosion, reduce baseflow, and degrade habitat. Nature-based solutions and properly vegetated or stabilized channel sections offer more sustainable and cost-effective alternatives.

## 9.3 Recommendations

Continue to require developers to design and construct on-site detention and retention facilities to ensure post-development runoff does not exceed pre-development conditions. This requirement, consistent with the Seminole County Land Development Code and stormwater standards, helps reduce localized and downstream flooding and supports CRS credit under Activity 430 (Higher Regulatory Standards).

Evaluate opportunities for implementing regional, upper watershed detention and retention basins to mitigate downstream conveyance challenges. These projects should be integrated into the County's stormwater planning and hazard mitigation programs, with consideration for dual-use benefits such as passive recreation, habitat restoration, and open space preservation in line with CRS Activity 420 (Open Space Preservation).Incorporate the results of drainage studies and capital improvement planning into project development and prioritization processes, especially for stormwater and localized flooding issues identified in repetitive loss areas or known problem basins. Where feasible, project designs should favor nature-based solutions and be structured to support long-term CRS credit under Activities 530 (Drainage System Maintenance) and 540 (Drainage Improvements).

## 9.4 References


1. *CRS Coordinator's Manual, FEMA, 2021.*
2. *CRS Credit for Floodplain Management Planning (Activity 510), FEMA, 2021.*
3. *CRS Credit for Drainage System Maintenance (Activity 530), FEMA, 2021.*
4. *Seminole County Public Works – Stormwater Division, Capital Improvement Program (CIP), 2025.*
5. *Mullet Lake Park Road Stormwater Improvement Project, Inwood Consulting Engineers, 2006.*
6. *Seminole County Land Development Code, Chapter 30 – Development Design Standards, current through July 2025.*
7. *Seminole County Local Mitigation and Resiliency Strategy (LMRS), 2025 Update*

# 10 Public Information Measures

A successful hazard mitigation program involves both the public and private sectors. Public information activities advise property owners, renters, and businesses about hazards and ways to protect people and property from these hazards. These activities can motivate people to take the steps necessary to protect themselves and others.

Information can bring about voluntary mitigation activities at little or no cost to the government. Property owners mitigated their flooding problems long before government funding programs existed. The typical approach to delivering information involves two levels of activity. The first is to broadcast a short and simple version of the message to everyone potentially affected. The second level provides more detailed information to those who respond and want to learn more.

This chapter starts with activities that reach out to people and tell them to be advised of the hazards and some of the things they can do. It then covers additional sources of information for those who want to learn more. It ends with an overall public information strategy.

## 10.1 Outreach Projects

Outreach projects are the first step in the process of orienting property owners to the hazards they face and the concept of property protection. They are designed to encourage people to seek out more information in order to take steps to protect themselves and their properties.

Research has shown that outreach projects work. However, awareness of the hazard is not enough; people need to be told what they can do about the hazard, so projects should include information on safety, health and property protection measures. Research has also shown that a properly run local infomation program is more effective than national advertising or publicity campaigns. Therefore, outreach projects should be locally designed and tailored to meet local conditions.

**Community newsletters/direct mailings:** The most effective types of outreach projects are mailed or distributed to everyone in the community. In the case of floods, they can be sent only to floodplain property owners.

**News media:** Local newspapers can be strong allies in efforts to inform the public. Press releases and story ideas may be all that's needed to whet their interest. After a flood in another community, people and the media become interested in their flood hazard and how to protect themselves and their property. Local radio stations and cable TV channels can also help. These media offer interview formats and local television stations may be willing to broadcast videos on the hazards.

**Other approaches:** Examples of other outreach projects include:

- Presentations at meetings of neighborhood, civic or business groups,
- Displays in public buildings or shopping malls,
- Signs in parks, along trails and on waterfronts that explain the natural features (such as the river) and their relation to the hazards (such as floods),
- Brochures available in municipal buildings and libraries, and
- Special meetings, workshops and seminars.

### 10.1.1 Local Implementation

Seminole County implements a variety of public outreach projects to increase awareness of flood risk, promote safety measures, and encourage property protection actions

**Figure 47: Flood Safety Brochure Distributed to Residents during Outreach Events**


Key local outreach initiatives include:

- Flood Safety Web Content: Seminole County maintains a comprehensive Flood Information webpage that provides residents with information on flood hazards, safety tips, property protection measures, flood insurance, and County floodplain regulations.
- Hurricane and Flood Preparedness Campaigns: The County coordinates public outreach before and during hurricane season through an annual Hurricane Action Day and "Touch a Truck" preparedness event. These events provide interactive opportunities for residents to engage with emergency response agencies, receive hurricane kits, and gather educational materials on flood and storm safety.
- Flood Awareness Week: Seminole County formally recognizes Flood Awareness Week each spring through a Board of County Commissioners proclamation. Throughout the week, the County delivers targeted messaging through social media, billboards, the County website, and in-person events. Messaging includes flood insurance promotion, stormwater and drainage system education, and personal mitigation steps residents can take to reduce risk. Materials are developed in coordination with the Seminole County Office of Emergency Management, Watershed Management Division, and Communications Department.
- Printed Educational Materials: Brochures including *A Guide to Flood Safety*, *Protecting Your Property from Flood Damage*, and *The Benefits of Flood Insurance* are distributed at community events, posted in public libraries, and available in County offices such as the Building Division and Environmental Services Department.
- News and Emergency Alerts: The Seminole County website and social media platforms are used to distribute real-time safety updates and preparedness tips ahead of and during flood events. Press releases and emergency alerts convey information on evacuation routes, shelter openings, road closures, and protective actions.
- Billboard Messaging: During hurricane season and other critical periods, the County contracts with local billboard operators to promote flood preparation, alert residents to flood risk, and encourage the purchase of flood insurance. Messages are tailored to emphasize local risk and action steps residents can take.

These efforts are developed and coordinated by Seminole County's Communications Division in partnership with Emergency Management, Watershed Management, and Planning & Development.

### 10.1.2 CRS Credit

The Community Rating System provides up to 350 points for outreach projects on flood topics. Extra points are given for having a Program for Public Information.

## 10.2 Real Estate Disclosure

Many property owners state after a flood or other natural disaster that they would have taken steps to protect themselves had they known their property was located in a flood-prone area. Disclosure of flood hazards during real estate transactions is an essential tool in helping buyers make informed decisions and encourage flood mitigation actions before damage occurs.

Federal Disclosure Requirements

Under federal law, federally regulated or insured lending institutions must determine whether a structure securing a mortgage loan is located within a Special Flood Hazard Area (SFHA), as shown on FEMA's Flood Insurance Rate Map (FIRM). If the structure is in an SFHA, flood insurance is mandatory as a condition of the loan. However, this determination is only required to be disclosed to the buyer within 10 days prior to closing. By this point, many buyers are already financially and emotionally committed to the purchase, reducing the likelihood they will alter their decision or take preventive action.

Florida State Law

Florida law requires the seller of real property to disclose known facts that materially affect the value of the property, including whether the property is in a flood zone. Additionally, Chapter 689.261, Florida Statutes, requires sellers to provide a natural hazards disclosure statement that identifies if the property is in a flood hazard area, wetlands, or coastal erosion zone. However, because flooding can be sporadic and flood maps may not capture all risk, sellers may not be aware of or may underestimate the extent of risk associated with a property. Furthermore, Florida does not currently require a standardized, detailed flood risk disclosure form at the time of sale, as is required in some other states.

### 10.2.1 Local Implementation

In Seminole County, the primary real estate disclosure requirement is found in the Seminole County Land Development Code. Per Chapter 35, Section 35.42, final subdivision plats must delineate the limits of the 1% annual chance flood (100-year floodplain), including flood elevation data, where applicable. This requirement helps inform future buyers of known flood hazards—but only for properties located within newer subdivisions recorded after the adoption of this requirement.

Limitations remain in the broader real estate market:

- The Multiple Listing Service (MLS) used by real estate professionals in Seminole County does not uniformly require or display flood zone designations or flood insurance requirements for listed properties.
- Disclosure practices outside of County-required platting are left largely to individual brokers and real estate agents.
- Properties developed before the floodplain delineation requirements went into effect may lack clearly documented risk indicators.

- Buyers often rely on title searches and survey information, which may or may not clearly indicate flood hazard information unless specifically requested.

Ongoing Efforts and Opportunities

Seminole County promotes public access to flood hazard information through the Flood Information Map Viewer on the Watershed Management website, which allows real estate professionals and residents to search any address in the County to determine flood zone status.

### 10.2.2 CRS Credit

Communities in Florida should be eligible for five points under the "Other disclosure requirements" for the state law requiring sellers to notify the buyer of natural hazards. Seminole County is eligible for 5 points for including the limits of the flood plain on all final plats.

## 10.3 Libraries and Websites

Identifying flood risk is the first step; the next is providing the public with access to reliable and actionable information about hazard protection, flood mitigation, and natural resource conservation. Seminole County utilizes both public libraries and its website to distribute this information to residents, property owners, and professionals.

Public Libraries

Seminole County's five public library branches—North Branch, Northwest Branch, West Branch, East Branch, and the Central Library in Casselberry—serve as key locations for sharing printed hazard-related materials with the public. Each branch maintains a physical collection of brochures and pamphlets on topics such as:

- Flood insurance and flood protection measures
- Hurricane and severe weather preparedness
- Retrofitting for flood, wind, and wildfire hazards
- Protecting natural floodplain functions

These materials are regularly reviewed and restocked by Seminole County Emergency Management and Watershed Management staff, particularly before and during the Atlantic hurricane season (June 1 – November 30). Many of these resources are obtained for free from FEMA, the Florida Division of Emergency Management (FDEM), and the National Flood Insurance Program (NFIP).

The County also coordinates with library staff to promote hazard awareness displays during Flood Awareness Week in March and Hurricane Season Preparedness Month in May. These displays may include books, handouts, posters, and digital resources to help patrons better understand flood risk and personal preparedness strategies.

Seminole County Websites

The Seminole County website (https://www.seminolecountyfl.gov) serves as a central hub for up-to-date floodplain management, emergency preparedness, and environmental protection information:

- Flood Information Map Viewer – Allows users to enter their address and view their property's flood zone designation, access Flood Insurance Rate Maps (FIRMs), and obtain elevation certificate guidance.
- Arkly Flood Risk Portal – Through Seminole County's Flood Information Map Viewer, residents can access the Arkly platform, an interactive flood risk tool that provides property-specific information including flood zone, base flood elevation, historical claims data, and estimated flood insurance premiums. The tool helps residents better understand their individual flood risk and explore mitigation and insurance options in an accessible, user-friendly format.
- Watershed Management Flood Info Page – Offers information on flood risk, mitigation measures, elevation requirements, and permits for construction in the floodplain.
- Emergency Management Hurricane and Severe Weather Page – Contains real-time updates and preparedness tips for hurricanes, floods, tornadoes, and wildfires.
- Disaster Preparedness Hub – Guides residents through emergency kit development, evacuation zones, shelter locations, and special needs registration.
- CRS and Floodplain Management Information – Includes this Floodplain Management Plan and Local Mitigation Strategy, available for download to the public.

The County maintains partnerships with FEMA, NOAA, and FloridaDisaster.org by linking to their resources. These external resources provide guidance for floodproofing homes, understanding flood insurance, and preparing family emergency plans.

Seminole County also links to educational resources for children and families, including:

- FEMA's Ready Kids – A child-friendly website offering games, preparedness lessons, and disaster safety checklists.

### 10.3.1 Local Implementation

A review of the Seminole County Public Library catalog in July 2025 indicates that the library system maintains a diverse and updated collection of resources on natural hazards. This includes over 40 publications related to flooding and more than 100 publications about hurricanes. Topics range from floodproofing and resilient construction practices to flood insurance, floodplain management policy, and guidance for interpreting FEMA Flood Insurance Rate Maps (FIRMs). These resources support residents, contractors, and professionals in understanding and preparing for flood risks.

The County also maintains a comprehensive and regularly updated website at www.prepareseminole.org. This site provides timely hazard and emergency information, educational materials, and updates on County programs and planning efforts, including the Local Mitigation Strategy, Floodplain Management Plan, and Resiliency initiatives. It includes sections dedicated to flood safety, storm preparation, insurance guidance, and recovery information.

Residents can also access FEMA's Flood Insurance Rate Maps (FIRMs) and flood zone information through the Flood Prone Areas page on the County's official website: https://www.seminolecountyfl.gov/departments-services/development-services/building/flood-prone-areas/

This page links directly to the Flood Information Map Viewer, powered by Arkly, which provides parcel-specific flood risk data, including base flood elevations, flood zone designations, and estimated insurance premiums, further empowering residents to make informed decisions about property protection and mitigation.

### 10.3.2 CRS Credit

The Community Rating System provides up to 20 points for having a variety of flood references in the local public library and up to 77 more for similar material on municipal websites (Activity 350 – Flood Protection Information).

## 10.4 Technical Assistance

### 10.4.1 Hazard Information

Providing map information is a valuable public service that enables residents, property owners, businesses, and real estate professionals to better understand flood risks. Knowledge of whether a property lies within a Special Flood Hazard Area (SFHA) or other mapped hazard area allows individuals to make informed decisions regarding flood insurance, building regulations, and property protection measures.

Seminole County provides FEMA's Flood Insurance Rate Maps (FIRMs) and Flood Insurance Study (FIS) information through several channels:

- Residents may access digital flood maps on the County's official floodplain mapping page: www.seminolecountyfl.gov/floodprone.
- Printed flood maps are available upon request through the Building Division.
- Staff are trained to assist residents with basic flood map inquiries, such as:
    - Whether a property is located in an SFHA.
    - The applicable flood zone designation.
    - Base Flood Elevation (BFE) data, where available.
    - Whether mandatory flood insurance requirements apply.
    - General guidance on submitting a Letter of Map Amendment (LOMA) or Letter of Map Revision (LOMR).

Staff may also supplement FEMA map data with information from other sources, such as known repetitive loss areas, localized drainage concerns, or flood elevations from historical flood events. Importantly, residents are reminded that being outside of the FEMA-mapped floodplain does not eliminate flood risk.

### 10.4.2 Property Protection Assistance

In addition to general outreach and online resources, Seminole County provides one-on-one property protection assistance to residents and businesses seeking to reduce their vulnerability to flooding or other hazards.

The County's Building Division offers technical guidance on:

- Site visits to identify flood risk and recommend mitigation measures.
- Recommendations for licensed contractors familiar with flood-resistant construction practices.
- Evaluation of anchoring and structural connections for manufactured homes and roofing systems.
- Guidance on protecting windows and garage doors from wind damage.
- Explanation of when building permits are required for mitigation projects.

Although County staff do not provide detailed design services, they help residents navigate the process and refer them to reputable resources and certified professionals.

FEMA offers national training resources that Seminole County encourages both staff and residents to utilize. These include:

- FEMA Emergency Management Institute's E273: "Managing Floodplain Development through the NFIP."
- Retrofitting workshops hosted periodically by FEMA or the U.S. Army Corps of Engineers.

These training opportunities build staff capacity and ensure consistency with federal best practices.

### 10.4.3 Local Implementation

Seminole County implements this activity through multiple public-facing programs:

- The Building Division provides in-person and digital flood map assistance upon request.
- Staff respond to inquiries by phone, email, or in person during regular business hours.
- All services are promoted via the County's website (www.prepareseminole.org) and through brochures and event outreach, such as during Flood Awareness Week or the annual Hurricane Expo.
- Flood mapping software such as FEMA FIRMs and Arkly.com are made available via the county website.

### 10.4.4 CRS Credit

The Community Rating System provides 140 points for providing map information to inquirers. Up to 71 points are available for providing one-on-one flood protection assistance to residents and businesses and for making site visits. Both services must be publicized.

## 10.5 Program for Public Information

The Program for Public Information (PPI) is a structured, ongoing effort by Seminole County to plan, implement, and evaluate public outreach efforts that promote flood awareness, flood insurance coverage, and protection of natural floodplain functions. The PPI is designed around

locally identified risks and target audiences, ensuring that the most relevant messages are conveyed through the most effective channels.

The Community Rating System (CRS) provides credit under Activity 330 – Outreach Projects, with additional bonus points for communities that develop a formal, stakeholder-driven PPI. The PPI must be documented, adopted, and updated regularly in coordination with a committee that includes both government and non-government stakeholders.

Key Elements of Seminole County's PPI Strategy:

- Assess Local Public Information Needs:
  The County evaluates current knowledge gaps, repetitive loss data, flood insurance coverage trends, and the needs of specific audience segments (e.g., residents in flood-prone areas, non-English speakers, renters, real estate agents).
- Formulate Key Messages:
  Flood safety and mitigation messages are based on CRS requirements and local risk profiles. Seminole County's priority messages include:
    - Know your flood risk.
    - Purchase and maintain flood insurance.
    - Protect your property from flood damage.
    - Preserve natural floodplain functions.
    - Understand evacuation zones and routes.
    - Know how to prepare before a flood or hurricane.
- Identify and Execute Outreach Projects:
  Outreach is conducted through a variety of media, including the County website, social media, printed brochures, utility bill inserts, digital signage, and community events such as:
    - Flood Awareness Week
    - The annual Hurricane Expo
    - Public meetings and workshops
- Coordinate with Other Public Information Initiatives:
  Seminole County coordinates its messaging with partners such as local municipalities, Seminole County Public Schools, the St. Johns River Water Management District, and regional floodplain management partners. The County also ensures alignment with Florida's Division of Emergency Management and FEMA outreach efforts.
- Document and Adopt the Program:
  The PPI is developed in accordance with CRS requirements and reviewed by the Floodplain Management Planning Committee, which also functions as the PPI Committee. The PPI is formally documented and incorporated into the County's Floodplain Management Plan and referenced in the Local Mitigation Strategy.
- Implement, Monitor, and Evaluate:
  The PPI is reviewed annually as part of the Floodplain Management Plan evaluation

process. Outreach project performance is assessed based on participation metrics, public survey responses, and flood insurance policy data. Updates are made to refine message delivery and improve effectiveness.

### 10.5.1 Public Information Topics

A key part of the FMP planning process was to obtain input from the public, particularly residents and businesses that have been affected by natural hazards. The public was invited to participate in the process in the following ways:

- Attending and participating in meetings of the FMPC. Five meetings were held in total. Five (5) members of the FMPC are appointed citizens from each of the Seminole County Commissioner's Districts to promote diverse public involvement.
- Contact with committee members.
- Letters mailed to repetitive loss areas regarding flood awareness, floodplain management planning involvement and potential mitigation opportunities as part of Seminole County's Flood Awareness Week campaign held the first week of March annually, in coordination with the Florida Floodplain Managers Association
- Public meetings held on March 27th, 2025, at the NW Branch Library) and the North Branch Library on August 20th, 2025, planning process to gain public input on the draft plan.

## Flood Safety

***Pay attention to evacuation orders.*** Listen to local radio or TV stations for forecasts and emergency warnings. Know about evacuation routes and nearby shelters and have plans for all family members on how to evacuate and where to meet if you're split up during an emergency.

***Do not drive through a flooded area.*** During a flood, more people drown in their cars than anywhere else. Don't drive around road barriers; the road or bridge may be washed out.

***Do not walk through flowing water.*** Flash flooding is the leading cause of weather-related deaths in the U.S. Currents can be deceptive; 6 inches of moving water can knock you off your feet in a strong current. If you walk in standing water, use a stick to help you locate the ground.

***Stay away from power lines and electrical wires.*** Electrical currents can travel through water. Report downed power lines to the police or sheriff by calling 911.

***Have the power company turn off your electricity.*** Some appliances, like TV sets, keep electrical charges even after they've been unplugged. Don't use appliances or motors that have gotten wet unless they have been taken apart, cleaned and dried.

***Look before you step.*** After a flood, the ground and floors are covered with debris like broken bottles and nails. Floors and stairs that are covered with mud can also be slippery.

***Be alert for gas leaks.*** Use a flashlight to inspect damage. Don't smoke or use candles, lanterns, or open flames unless you know the gas has been shut off and the area has been ventilated.

***Look out for animals*** that may have been flooded out of their homes and who may seek shelter in yours. Use a pole or stick to turn things over and scare away small animals.

***Carbon monoxide exhaust kills.*** Use a generator or other gasoline-powered machine outdoors. The same goes for camping stoves. Charcoal fumes are especially deadly – cook with charcoal outdoors.

***Clean everything that got wet in the flood.*** Floodwaters have picked up sewage and chemicals from roads, farms, factories, and storage buildings. Spoiled food, and flooded cosmetics and medicines can be health hazards. When in doubt, throw it out.

***Take care of yourself.*** Recovering from a flood is a big job. It is tough on both the body and the spirit and the effects a disaster has on you and your family may last a long time.


## Flood Safety

***Pay attention to evacuation orders.*** Listen to local radio or TV stations for forecasts and emergency warnings. Know about evacuation routes and nearby shelters and have plans for all family members on how to evacuate and where to meet if you're split up during an emergency.

***Do not drive through a flooded area.*** During a flood, more people drown in their cars than anywhere else. Don't drive around road barriers; the road or bridge may be washed out.

***Do not walk through flowing water.*** Flash flooding is the leading cause of weather-related deaths in the U.S. Currents can be deceptive; 6 inches of moving water can knock you off your feet in a strong current. If you walk in standing water, use a stick to help you locate the ground.

***Stay away from power lines and electrical wires.*** Electrical currents can travel through water. Report downed power lines to the police or sheriff by calling 911.

***Have the power company turn off your electricity.*** Some appliances, like TV sets, keep electrical charges even after they've been unplugged. Don't use appliances or motors that have gotten wet unless they have been taken apart, cleaned and dried.

***Look before you step.*** After a flood, the ground and floors are covered with debris like broken bottles and nails. Floors and stairs that are covered with mud can also be slippery.

***Be alert for gas leaks.*** Use a flashlight to inspect damage. Don't smoke or use candles, lanterns, or open flames unless you know the gas has been shut off and the area has been ventilated.

***Look out for animals*** that may have been flooded out of their homes and who may seek shelter in yours. Use a pole or stick to turn things over and scare away small animals.

***Carbon monoxide exhaust kills.*** Use a generator or other gasoline-powered machine outdoors. The same goes for camping stoves. Charcoal fumes are especially deadly – cook with charcoal outdoors.

***Clean everything that got wet in the flood.*** Floodwaters have picked up sewage and chemicals from roads, farms, factories, and storage buildings. Spoiled food, and flooded cosmetics and medicines can be health hazards. When in doubt, throw it out.

***Take care of yourself.*** Recovering from a flood is a big job. It is tough on both the body and the spirit and the effects a disaster has on you and your family may last a long time.



## Flood Safety

***Pay attention to evacuation orders.*** Listen to local radio or TV stations for forecasts and emergency warnings. Know about evacuation routes and nearby shelters and have plans for all family members on how to evacuate and where to meet if you're split up during an emergency.

***Do not drive through a flooded area.*** During a flood, more people drown in their cars than anywhere else. Don't drive around road barriers; the road or bridge may be washed out.

### 10.5.2 CRS Credit

The CRS provides 100 points for a public information program strategy. A mass mailing to all properties can earn up to 60 more points and can meet the publicity requirements to receive credit for several other activities.

## 10.6 Conclusions

1. There are many ways that public information can be used so that people and businesses will be more aware of the hazards they face and how they can protect themselves.
2. Many of the public information activities can be implemented by community staff. By creating and implementing a Program for Public Information, the County and its jurisdictions can earn additional credit points through the CRS.
3. Outreach projects, libraries, websites and the Hurricane Expo are currently being used as public information tools in Seminole County.
4. The most important topics to cover in public information activities are:
    - Safety precautions for all types of hazards, but especially storms, floods and fog. Evacuation is recognized as the most important safety precaution for tropical storms and hurricanes.
    - Flood protection measures, including rules for new construction and insurance.
    - Keeping drainage ways clear and protection from local drainage problems.
    - Family and emergency preparedness measures.
    - County resources and programs.
    - Protecting water quality and wetlands and the benefits of open space.

The most appropriate ways to spread this information are:

- Websites and social media
- Mailings to everyone, in utility bills or otherwise
- News releases or newspaper articles
- Newsletters
- Displays, particularly at special events such as the Hurricane Expo or Touch A Truck
- Handouts, flyers and other materials, which can distributed at special events and presentations

## 10.7 Recommendations

1. The County should continue to increase its presence on social media, including Facebook, Instagram and NextDoor, to maximize the number of people reached with flood hazard and safety information.
2. The County should continue to distribute brochures about hurricanes to those living in the mapped floodplain.
3. The County should continue to hold outreach events such as Hurricane Action Day, and Touch a Truck events.
4. Staff should reach out to homeowners' associations and faith-based organizations to help spread the word about flood hazards and safety measures.
5. The County should create and implement a multi-jurisdictional Program for Public Information (PPI) for credit under the CRS.

## 10.8 References


1. Are You Ready? A Guide to Citizen Preparedness, FEMA, 2004 (updated from 2002). https://www.fema.gov/emergency-managers/individuals-communities/are-you-ready *(FEMA's comprehensive guide for household disaster planning and response.)*

2. CRS Coordinator's Manual, FEMA National Flood Insurance Program, 2021 Addendum. https://www.fema.gov/floodplain-management/community-rating-system *(Primary CRS guidance document for Activity 330 – Outreach Projects, Activity 350 – Flood Protection Information, and Activity 370 – Flood Insurance Promotion.)*

3. CRS Credit for Outreach Projects, FEMA, 2006. *(Still a relevant technical supplement, though partially superseded by updates in the 2021 Coordinator's Manual.)*

4. Seminole County Flood-Prone Areas Map Resource Page, Seminole County Building Division, 2025. https://www.seminolecountyfl.gov/departments-services/development-services/building/flood-prone-areas/ *(Provides flood map access and localized floodplain information.)*

5. Arkly Property Flood Disclosure Tool, Florida Department of Environmental Protection / Arkly Technologies, 2025. https://floridafloodresources.org *(Linked from Seminole County's flood information page; supports consumer flood zone lookups and disclosure awareness.)*

6. Seminole County Emergency Management: PrepareSeminole.org, 2025. https://www.prepareseminole.org

*(The County's hub for emergency preparedness, outreach content, and mitigation planning updates.)*

# 11 Revisions and Maintenance

Development trends and land use changes that may impact existing infrastructure or increase vulnerability to flooding and other hazards;

Hazard events, such as hurricanes, tropical storms, or localized flooding, that reveal new or evolving risk areas within Seminole County;

Completion of mitigation actions and incorporation of newly identified strategies, goals, or projects;

Modifications to County policy, procedures, or ordinances, including updates to the Seminole County Land Development Code or Comprehensive Plan;

Revisions to building codes and construction practices, especially those impacting floodplain development or resiliency measures;

Legislative or funding changes at the federal, state, or local level that influence hazard mitigation program implementation;

Updates to Flood Insurance Rate Maps (FIRMs) or National Flood Insurance Program (NFIP) policies that alter floodplain boundaries or insurance requirements.

The Office of Emergency Management prepares an Annual Progress Report for the FMP. This report evaluates the implementation status of mitigation actions, identifies successes, and notes areas for improvement. The report is made available to the public via the Seminole County website and is distributed to all participating jurisdictions. This report also fulfills Community Rating System (CRS) requirements under Activity 510 – Floodplain Management Planning, which mandates an annual evaluation and documentation of plan progress.

The FMP is formally reviewed and re-adopted every five years by the governing bodies of all participating jurisdictions. This five-year review ensures that mitigation actions remain aligned with each jurisdiction's strategic goals, comprehensive planning priorities, and community-specific needs. As part of the adoption process, jurisdictions reaffirm their commitment to implementing, refining, and expanding the mitigation initiatives outlined in the FMP.

| | | |
|---|---|---|
| | **Special Flood Hazard Ordinance** | |
| 1 | The County staff should review all development ordinance language pertaining to development in the Special Flood Hazard Area (SFHA) that would require new/improved infrastructure to have hazard mitigation provisions. | |
| | Responsible Agency | Seminole County Development Services |
| | Deadline | October2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 1.2 |
| | Project Status | |
| | Notes | |
| | **Open Space Preservation** | |
| 2 | The County should use every opportunity to encourage preservation of floodplain areas as open space or other uses compatible with the flooding hazard to preserve floodplain storage capacity and reduce the potential for damage to structures. | |
| | Responsible Agency | Seminole County Development Services |
| | Deadline | October 2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 1.3 |
| | Project Status | |
| | Notes | |
| 3 | **Evaluate Increasing Higher Standards** | |
| | The County should continue to enforce its existing regulations for development and mobile homes and explore the cost and benefits of other higher standards to further protect the residents of Seminole County, such as a higher freeboard requirements. | |
| | Responsible Agency | Seminole County Development Services |
| | Deadline | October 2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 1.2 |
| | Project Status | |
| | Notes | |
| 4 | **Promote and Distribute Homeowner Property Evaluation Checklist** | |
| | Promote and distribute the Homeowners Property Evaluation Checklist. Vulnerable Populations, other languages, links on websites, during permit distribution, local media outlets, realtors, insurance agencies, banking institutions. | |
| | Responsible Agency | Seminole County Development Services and Office of Emergency Management |
| | Deadline | October 2030 |
| | Cost | Staff Time |

| | | |
|---|---|---|
| | Project Status | 3.1 |
| | Notes | |
| 5 | **Cost Sharing Programs** | |
| | Seminole County should evaluate potential cost sharing programs both public and private, such as grants, rebates, tax, insurance credits, to encourage low cost property protection measures on private property. For example:<br>• Surface and subsurface drainage improvements,<br>• Berms and regrading for shallow surface flooding, and<br>• Relocating equipment as per code above the base flood elevation<br>• May offer free permit to citizens for flood mitigation measures | |
| | Responsible Agency | Seminole County Emergency Management |
| | Deadline | October 2030 |
| | Cost | Staff Time/ Grants |
| | FMP Goal & Objective | 4.1 |
| | Project Status | |
| | Notes | |
| 6 | **Funding Options** | |
| | The County should seek state and federal funding support for higher cost measures, such as elevation, relocation and acquisition of high priority properties. Mitigation funding opportunities should be investigated for all eligible properties. High priority properties are:<br>• Those properties in repetitive loss areas.<br>• Critical facilities in the special flood hazard area or subject to flood depths of more than two feet. | |
| | Responsible Agency | Seminole County Office of Emergency Management |
| | Deadline | October 2030 |
| | Cost | Grants |
| | FMP Goal & Objective | 4.1, 4.2, 5.1 & 5.2 |
| | Project Status | |
| | Notes | |
| 7 | **Water Management Ordinance** | |
| | Seminole County should continue to enforce the floodplain management, wetland protection, erosion and sediment control and Best Management Practices (BMP) provisions of all water management ordinances. | |
| | Responsible Agency | Seminole County Development Services and Seminole County Public Works |
| | Deadline | October 2030 |
| | Cost | Staff Time |

| | | |
|---|---|---|
| | FMP Goal & Objective | 1.4 |
| | Project Status | |
| | Notes | |
| **8** | **Emergency Operations Plan** | |
| | The Seminole County Emergency Operations Plan should be reviewed in detail on an annual basis to determine where updates and improvements can be made and how to maximize credit under CRS. The Plan should then be submitted periodically for credit under CRS, and CRS will provide a critique of the plan to show what further improvements are needed. | |
| | Responsible Agency | Seminole County Emergency Management |
| | Deadline | October 2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 4.2 |
| | Project Status | |
| | Notes | |
| **9** | **Gauge Funding** | |
| | The County should pursue all possible local, state federal and other funding options for installation of additional and/or improved lake, stream, river gauges to provide a higher level of protection to its residents. The investigation of additional gauging stations should be done in cooperation with the National Weather Service, St. Johns River Water Management District, the United States Geological Survey and FEMA. | |
| | Responsible Agency | Seminole County Public Works and Office of Emergency Management |
| | Deadline | October 2030 |
| | Cost | Grants/ General Funds |
| | FMP Goal & Objective | 2.2 |
| | Project Status | |
| | Notes | |
| **10** | **Review and Update Post- Disaster Emergency Permitting** | |
| | The County's emergency management, public information, and permitting teams should collaborate to formalize post-disaster procedures specifically related to flood response and recovery. These procedures should address public outreach, reconstruction regulations within flood-prone areas, and the identification of potential flood mitigation projects. These concepts should be expanded upon, refined, and adopted as a clearly defined set of policies and procedures within the framework of the Floodplain Management Plan. | |
| | Responsible Agency | Seminole County Emergency Management |
| | Deadline | October 2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 3.1 |

| | | |
|---|---|---|
| | Project Status | |
| | Notes | |
| **11** | **Continued On-Site Detention and Retention and Evaluation of County Maintenance of Facilities** | |
| | The County should continue to require developers to provide on-site detention and retention to lessen the volume and/or rate of runoff from developed sites. The County should evaluate the inspection and maintenance of these facilities to ensure that the designed storage is maintained and outfalls and piping remain in good condition. | |
| | Responsible Agency | Seminole County Development Services and Seminole County Public Works |
| | Deadline | October 2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 1.6 |
| | Project Status | |
| | Notes | |
| **12** | **Regional Detention** | |
| | The County should consider the benefits of upper watershed regional detention as a way to reduce downstream flow. This approach could be combined with the preservation of open space. | |
| | Responsible Agency | Seminole County Development Services |
| | Deadline | October 2030 |
| | Cost | Staff Time/ Grants |
| | FMP Goal & Objective | 1.3 |
| | Project Status | |
| | Notes | |
| **13** | **Outreach Projects for Flood Hazard Mitigation Benefits** | |
| | The public and decision makers should be informed about the flood hazard mitigation benefits of restoring rivers, wetlands and other natural areas. Restoration and protection techniques should be explained. This should include publicizing the need to protect lakes, streams, rivers and wetlands from illegal dumping and/or filling and inappropriate development. This campaign can be conducted through direct mail, website development, and/or neighborhood meetings. | |
| | Responsible Agency | Seminole County Environmental Services |
| | Deadline | October 2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 1.4 |
| | Project Status | |
| | Notes | |

| | | |
|---|---|---|
| **14** | **Outreach Projects for Property Protection** | |
| | Public education materials should be developed to explain property protection measures that can help owners reduce their exposure to damage by floods and the various types of insurance that are available. Because properties in floodplains may be damaged at some point, a special effort should be made to provide information and advice to floodplain property owners. Special attention should be given to repetitive loss and high hazard areas. Explore local incentives for voluntary protection measures. This can be accomplished through the following techniques:<br>• The County's website should be improved to make navigation to flood hazard and safety information more intuitive.<br>• The County should increase its presence on social media, such as Facebook and NextDoor, to maximize the number of people reached with flood hazard and safety information.<br>• The County should continue to distribute brochures about hurricanes to those living in the mapped floodplain.<br>• The County should continue to hold and expand Hurricane Action Day, Severe Weather Awareness Week, and Flood Awareness Week.<br>• Staff should reach out to homeowners' associations and faith-based organizations to help spread the word about flood hazards and protection and safety measures. | |
| | Responsible Agency | Seminole County Office of Emergency Management |
| | Deadline | October 2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 3.2 & 3.3 |
| | Project Status | |
| | Notes | |
| **15** | **Public Information Strategy** | |
| | The County should maintain a public information outreach program strategy for credit under the CRS and to prepare a program that evaluates the County's current outreach program to identify strengths and areas of improvement. | |
| | Responsible Agency | Seminole County Office of Communications and Office of Emergency Management |
| | Deadline | October 2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 3.2 |
| | Project Status | |
| | Notes | |
| **16** | **Critical Facility Protection** | |
| | Identify critical facilities whose functionality may be impacted by flood hazards and develop mitigation measures for protection. | |
| | Responsible Agency | Seminole County Office of Emergency Management and Seminole County Development Services |
| | Deadline | October 2030 |
| | Cost | Staff Time / Grants |

| | | |
|---|---|---|
| | FMP Goal & Objective | 4.2 |
| | Project Status | |
| | Notes | |
| **17** | **Identify Stormwater and Address Flooding** | |
| | Update the Seminole County Stormwater Master plan to identify new mitigation projects utilizing historical flood, rainfall data and modeling | |
| | Responsible Agency | Seminole County Roads and Stormwater |
| | Deadline | October 2030 |
| | Cost | Staff Time / Grants |
| | FMP Goal & Objective | 1.1 |
| | Project Status | Not started |
| | Notes | |
| **18** | **Floodplain Informed Public Warning System** | |
| | Enhance public warning systems with floodplain data and allow for emergency notification | |
| | Responsible Agency | Seminole County Emergency Management |
| | Deadline | December 2026 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 2.1 |
| | Project Status | Not started |
| | Notes | |
| 19 | **Environmental Protection** | |
| | The County will continue to review new developments and buildings to protect aquifers and environmentally sensitive lands within the floodplain. | |
| | Responsible Agency | Seminole County Building Division & Public Works |
| | Deadline | October 2030 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 1.5 |
| | Project Status | Continuous |
| | Notes | |
| 20 | **Techonological Advancement** | |
| | Monitor technological advancements and implement new technologies where applicable to ensure reliable communications with residents and guests | |
| | Responsible Agency | Seminole County Emergency Management |

| | | |
|---|---|---|
| | Deadline | October 2030 |
| | Cost | Staff Time / Grants / Other |
| | FMP Goal & Objective | 2.1 |
| | Project Status | |
| | Notes | |
| 21 | **Public Flood Reporting System** | |
| | Create electronic reporting on the Seminole County website for residents to submit flooding reports and drainage to Public Works and Emergency Management | |
| | Responsible Agency | |
| | Deadline | December 2036 |
| | Cost | Staff Time |
| | FMP Goal & Objective | 5.3 |
| | Project Status | |
| | Notes | |

## Goals

Goal 1: Reduce vulnerability and exposure to flood hazards in order to protect the lives, health, safety, and property of Seminole County residents and guests.

**Objective 1.1:** Focus mitigation efforts on flooding resulting from heavy rainfall which causes runoff, overbank, backwater, and stormwater issues to keep the problem from getting worse

**Objective 1.2:** Implement regulatory measures to guide new development in areas that are more likely to be exposed to the effects of flood damage

**Objective 1.3:** Preserve open space in Special Flood Hazard Area (SFHA) areas, especially where there are sensitive natural areas and agricultural lands

**Objective 1.4:** Protect the environmental integrity of the natural water systems in Seminole County by focusing on water quality and best management practices

**Objectives 1.5:** Continue to protect aquifers and environmentally sensitive lands from encroachment of development by requiring buffers and other setbacks mechanisms

**Objective 1.6:** Reduce stormwater runoff through adequate stormwater management, flood control, on-site retention and best management practices to mitigate impacts associated with incremental construction and redevelopment projects

Goal 2: Enhance public education, information, and warning systems to improve safety and communication for the protection of residents and visitors of Seminole County.

**Objective 2.1:** Leverage state and federal emergency management funding for planning, training and equipment

**Objective 2.2:** Seek funding for the installation of stream and river gauges to help provide increased flood warning capability

Goal 3: Encourage property owners through education and outreach measures to protect their homes and businesses from flood damage.

**Objective 3.1:** Empower residents to take proactive responsibility for future flood risk protection and pursuit of mitigation efforts to their property.

**Objective 3.2:** Promote flood insurance as a property protection measure against flood damage through multiple methods, including enhancements to the county website to provide information on comprehensive flood preparedness/protection and flood insurance

**Objective 3.3:** Educate property owners, including those with repetitive loss properties, on mitigation opportunities to mitigate future flood risk.

Goal 4: Protect critical and cultural assets, public infrastructure, and businesses from flood hazards and reduce the vulnerability of flood damage to these assets.

**Objective 4.1:** Seek County, Regional, State, Federal, and other funding support for flood mitigation projects

**Objective 4.2:** Identify and implement flood mitigation measures or strategies as necessary to protect critical infrastructure and facilities from flood damage

Goal 5: Identify properties susceptible to flood damage and implement cost-effective and affordable improvements, including those which reduce the number of repetitively damaged structures.

**Objective 5.1:** Leverage mitigation funding opportunities to facilitate buyouts, elevations and other mitigation efforts to alleviate flood risk

**Objective 5.2:** Target repetitive loss properties for implementation of mitigation projects

**Objective 5.3:** Allow continued opportunities for members of the public to be part of the planning process, including identifying areas susceptible to flooding

# Introduction

### Overview

The City of Altamonte Springs was incorporated in 1920. It is located in the southern portion of Seminole County, bordered by Orange County to the south. The City of Winter Springs is to the east of Altamonte Springs, the City of Longwood is to the north, and unincorporated areas to the west of Altamonte Springs. Altamonte Springs currently covers 9.67 square miles. The current population is 47,313 people (Bureau of Economic and Business Research, 2024).

Figure 1. City of Altamonte Springs

Source: Seminole County GIS Dept

### Involvement with the National Flood Insurance Program (NFIP)

Altamonte Springs became eligible for the National Flood Insurance Program's (NFIP) Community Rating System (CRS) on October 1, 1994. The CRS is a voluntary program for NFIP-participating communities. The goals of the CRS are to reduce flood losses, to facilitate accurate insurance rating, and to promote the awareness of flood insurance. The CRS was developed to encourage communities to go beyond the minimum NFIP requirements to further reduce flood losses. The incentives are in the form of premium discounts.

The City continues to participate in the CRS program and is currently ranked as a Class 7. With the Class 7 ranking, the discount percentage applied to insurance premiums for properties located in a Special Flood Hazard Area (SFHA) is 15%. The premium discount available to property owners not located in a SFHA is 5%.

Figure 2. Severe Weather

# Risk Assessment

This section of the community profile assesses the potential of risk with respect to floodplain management in Altamonte Springs. Communities must address four components when assessing risk. They are identifying hazards, profiling hazard events, inventorying assets, and estimating losses. This process measures the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural hazards (FEMA). There are six categories that address the four components identified in risk assessment as defined through the Federal Emergency Management Agency (FEMA): identifying flood zones within the city, identifying surface water locations, identifying property value within each flood zone, identifying insurance statistics, identifying vulnerable populations, and identifying critical facilities.

**FEMA Flood Zone**

Figure 3. FEMA Flood Zone,
Percentage of Acreage for the City of Altamonte Springs, 2025,
Non-Submerged Acres

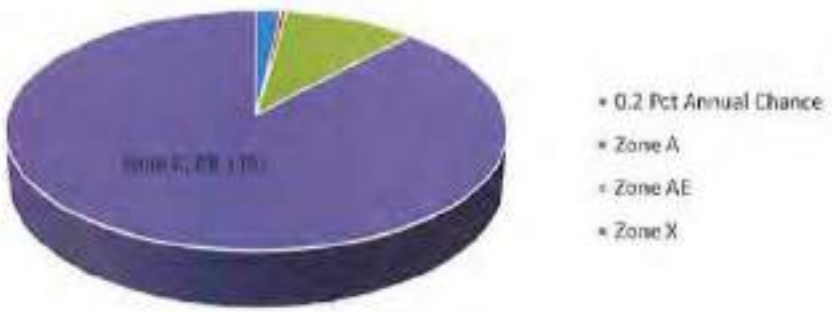



Figure 3 shows that the percentage of non-submerged acreage found in Altamonte Springs. Non-submerged acreage refers to land not inundated by surface water. Close to half of this category can be found in the northeast section of the city in the outlier sections of Cranes Roost Lake. The largest percentage of non- submerged acreage in Altamonte Spring is Flood Zone X accounting for 88.11%. The 0.2 percent Annual Chance Flood Hazard of the 100 Year Flood accounts for 1.82% of the total percentage of non-submerged acreage. Flood Zone A accounts for 0.43% of total percentage, the majority of this flood zone is located in the southern segment of Altamonte Springs. Flood Zone AE accounts for 9.63% of the total percentage of non- submerged acreage. This zone is found throughout the City.

## Surface Water

Table 1. Percentage of Total Surface Water Within City Limits

| Surface Water Name | Percentage, % |
|---|---|
| Lake Orienta | 21.99 |
| Lake Lotus | 20.67 |
| Prairie Lake | 11.96 |

SOURCE: Altamonte Springs GIS Dept.

There are 27 bodies of surface water located in Altamonte Springs. Surface water accounts for 6.0% of the total land make-up. Table 1 displays the three largest bodies of water and their percentage of total surface water in Altamonte Springs

All bodies of water are located in or within close proximity of the SFHA.

The vast majority of these lakes are closed basin lakes with no outlets. Rainfall causes closed basin lakes to rise faster than drain. The result is a variation in water elevation that can lead to flooding.

Lake Orienta is the City's largest surface water body accounting for 21.99% (81.6 acres within the City boundary). The lake is located in the southeast section of the City.

The second largest body of water is Lake Lotus at 20.67% of the total percentage of surface water. The location of this lake is on the City's eastern boundaries with the county.

The third largest lake is Prairie Lake, the lake accounts for 11.96% of the total surface water in Altamonte Springs.

Figure 4. Lake Orienta, Aerial View

Figure 5. Prairie Lake

Source: Seminole County Water Atlas

## Property Value

Table 2. Total Appraised Value by Flood Zone

| Flood Zone | Total Appraised Value |
|---|---|
| 0.2 % Chance | $1,029,904,775.00 |
| Zone A | $185,160,409.00 |
| Zone AE | $4,910,968,279.00 |
| Zone X | $4,910,698,279.00 |
| Total | $7,516,717,846.00 |

SOURCE: Altamonte Springs GIS Dept.

Altamonte Springs has over $7,516,717,846.00 in property and building value that could be at risk in the event of a flood hazard. The 0.2 Percent Annual Chance Flood Hazard of the 10-year flood contains 16.8% of the total appraised value. Flood Zone A contains 3.5% of the total appraised value. Flood Zone AE comprises 11.5% of the property value that could be exposed to risk. Flood Zone X accounts for 68.2% of the total property value.

## Insurance Statistics

Table 3. Policy Statistics for the City of Altamonte Springs

| Polices In-Force | Insurance In-Force Whole | Written Premium In-Force |
|---|---|---|
| 854 | $189,679,200.00 | $475,985.00 |

Altamonte Springs has 854 insurance policies in force according to the Federal Emergency Management Agency. The total coverage amounts for these insurance policies $189,679,200.00 while the average premium paid for them was $475,985.00.

### Vulnerable Population

Vulnerable populations are those segments of the community considered to be most prone to risk in the time of a hazard. In Altamonte Springs, 15.22% of the population is over the age of 65 and 11.2% of the population has a disability. A significant portion of the people who have a disability are over the age of 65.

### Repetitive Loss Property

Repetitive Loss properties are defined as those properties that has had two or more flood insurance claims of more than $1,000 each within any rolling 10-year period since 1978. This designation can apply to any residential or non-residential building insured by the NFIP. Altamonte Springs has 26 repetitive loss properties (July 2025).

### Manufactured Homes

Figure 6. Manufactured Home Foundations

Source: Livingwithmyhome.com

Chassis are the steel frames of manufactured homes. Block piers and anchors are building methods utilized to mitigate flood damage.

Altamonte Springs currently has no manufactured homes located within its boundaries. Manufactured homes located in the Special Flood Hazard Area (SFHA) would have to comply to mitigation regulations that reduce flood damage include elevating the foundation to one foot above the base flood elevation (BFE). Manufactured homes must also be anchored to a foundation system to prevent floatation or varying forms of movements.

### Critical Facilities

Critical facilities are defined as those facilities that provide a critical function and should be protected from flood damage. Altamonte Springs has identified 21 critical facilities throughout its limits and the emergency function they provide in times of crisis. No facility is located in the SFHA.

# Mitigation Measures

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters (FEMA). The policies adopted by Altamonte Springs work to achieve these objectives and prevent flood damage. This community profile analyzes mitigation policies including Future Land Use, Environmental Efforts, Stormwater Management, and Building Practices all identified through the City's Comprehensive Plan and Land Development Code. Altamonte Springs is an active member of the Local Mitigation Strategy and works to make sure all plans are up to date.

**Future Land Use**

An analysis of the Future Land Use Map by Flood Zone for the City of Altamonte Springs is aggregated below by percentage of total acreage in the specified flood zone. This analysis reflects the potential hazards that come with planning for growth in flood prone areas.

Table 5. 0.2 Percent Annual Chance Flood Hazard by Future Land Use (FLU)

| Altamonte Springs Future Land Use | Percentage, % |
|---|---|
| Conservation | 0.55 |
| Industrial | 0.57 |
| Institutional | 2.50 |
| Low Density Residential | 26.30 |
| Medium Density Residential | 20.95 |
| Office/Residential | 10.66 |
| RBC Core East | 41.53 |
| RBC Core West | 3.03 |
| Regional Business Center | 2.73 |
| West Town Center | 0.79 |

SOURCE: Altamonte Springs GIS Dept.

In Altamonte Springs, 41.53% of the total percentage of acreage for the 0.2 Percent Annual Chance Hazard of the 100-year flood is planned for Regional Business Center Core East. Regional Business Centers and Town Centers are a variation of mixed-use districts. The second largest future land use for the zone is Low Density Residential at 26.30%. Medium Density Residential developments account for 20.95%. Institutional composes 2.50 of the total future land use for this flood zone.

Table 6. Flood Zone A by Future Land Use (FLU)

| Altamonte Springs Future Land Use | Percentage, % |
|---|---|
| Gateway Center | 94.64 |
| Industrial | 1.75 |
| Medium Density Residential | 3.61 |

SOURCE: Altamonte Springs GIS Dept.

In Flood Zone A 94.64% of all future land use is planned for the Gateway Activity Center. This future land use is a variation of a mixed-use district. The remaining future uses are Medium Density Residential Development at 3.61%. Industrial comprises 1.75% of the total.

Table 7. Flood Zone AE by Future Land Use (FLU)

| Altamonte Springs Future Land Use | Percentage, % |
|---|---|
| Commercial/Office | 2.08 |
| Conservation | 19.87 |
| East Town Center | 3.60 |
| Gateway Center | 11.93 |
| Industrial | 0.18 |
| Institutional | 3.67 |
| Low Density Residential | 28.96 |
| Medium Density Residential | 13.30 |
| Office/Residential | 0.41 |
| RBC Core East | 11.98 |
| RBC Core West | 1.00 |
| Regional Business Center | 1.23 |
| West Town Center | 1.72 |

SOURCE: Altamonte Springs GIS Dept.

In Altamonte Springs, 28.96% of the total future land use for Flood Zone AE is identified as Low Density Residential. Conservation comprises 19.87% of the total make-up. Medium Density Residential also has a notable percentage of the total acreage in this zone at 13.30%. The Regional Business Center Core East and Gateway Activity Center account for 11.98% and 11.93%, respectively. Institutional makes up 3.67% of the total percentage of acres. Commercial and Office is 2.08% and Regional Business Center Core West is 1.00% of the total percentage of acreage. East Town Center and Regional Business Center Activity Center are 3.60% and 1.23%, respectively, of the total

percentage of acreage. Office and Residential and West Town Center complete the remaining future land use of this zone with 0.41% and 1.72%, respectively.

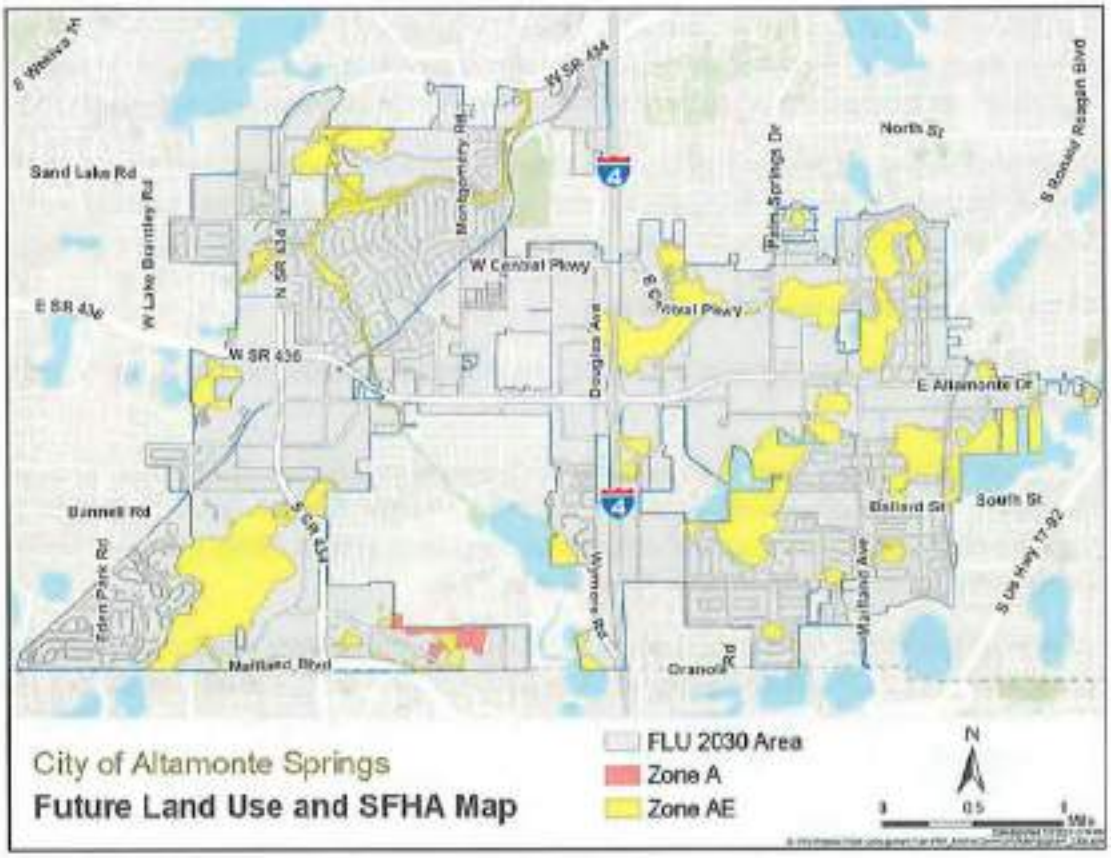
Table 8. Flood Zone X by Future Land Use (FLU)

| Altamonte Springs Future Land Use | Percentage, % |
|---|---|
| Commercial/Office | 4.14 |
| Conservation | 0.38 |
| East Town Center | 3.54 |
| Gateway Center | 4.86 |
| Industrial | 2.70 |
| Institutional | 3.10 |
| Low Density Residential | 37.42 |
| Medium Density Residential | 8.91 |
| Office/Residential | 2.01 |
| RBC Core East | 4.49 |
| RBC Core West | 5.38 |
| Regional Business Center | 11.07 |
| Right of Way | 2.51 |
| West Town Center | 9.49 |

SOURCE: Altamonte Springs GIS Dept.

In Flood Zone X, 37.42% of the total percentage of acreage is classified as Low Density Residential. The second most planned use in this flood zone is Medium Density Residential at 8.91%. Regional Business Activity Center is 11.07%, and West Town Center and Gateway Activity Center at 9.49% and 4.86%, respectively, of the total percentage of acreage. Regional Business Center Core East and West make up 4.49% and 5.38% of the total acreage. Commercial and Office comprises 4.14% and East Town Center is 3.54%. Industrial, Office and Residential, and Conservation have future land uses for Flood Zone X with 2.70%, 2.01%, and 0.38%, respectively.

Figure 7. Future Land Use and Special Flood Hazard Areas (SFHA)



### Environmental Efforts

Environmental policies are a means to which a municipality values its natural heritage. Best management practices in Floodplain Management mitigation include preserving natural areas located in floodplains or directing open space/ recreation uses towards them.

Altamonte Springs has committed itself to the protection of wetlands. The City enforces Flood Hazard Avoidance Regulations and conserves wetlands where habitats act as wildlife corridors. Wetlands act as a natural mitigation measure in mitigating flood damage.

## Erosion and Sedimentation Control

The City of Altamonte Springs is working on plans to improve the basin for the Little Wekiva River.

Along the Little Wekiva River, certain areas are prone to soil erosion. The City of Altamonte Springs in coordination with Seminole County, Orange County, and the SJRWMD implemented several erosion and sedimentation control project along the Little Wekiva River identified in the Little Wekiva River Master Plan.

After Hurricane Irma, Altamonte Springs applied for the Emergency Watershed Protection grant from the USDA Natural Resources Conservation Service to remove fallen trees and debris and to install erosion control countermeasures in 8 locations along the Little Wekiva River between S.R. 436 and S.R. 434.

Figure 8. Wetland Protection

Altamonte Springs protects wetlands because they act as a natural mitigation measure.

Figure 9. Wetland Protection

Area along the Little Wekiva River Basin where soil erosion is visible.

## Stormwater Management

Stormwater management practices are an essential component in mitigating flood damage. Policies enacted at the municipal level are essential in controlling stormwater runoff and minimizing damage on property.

The City of Altamonte Springs has established regulations in the City's many LOS standards for stormwater quality and quantity.

There are currently 626 stormwater ponds (86 public and 540 private) as well as many other facilities such as pump stations, roadside drainage, and control structures.

The City protects wetlands so there is also a natural drainage system in the area. The City also adheres to best management practices that reduce run- off and improve water quality. Altamonte Springs is currently working to update its stormwater master plan, written is 1995 and last revised in 2002. This is because of the ongoing development and growth in the City as well as the changes that have occurred in last 20 years.

Figure 10. Stormwater Pond

Stormwater pond located in Altamonte Springs.

## Building Practices

Building Practices are essential in mitigating flood damage to structures located in flood prone zones. There are different practices that help protect property and citizens. The City of Altamonte Springs is currently working to adopt a variation of the State Model Floodplain ordinance that incorporates recent changes to the Florida Building Code. This will be presented to the City Commission for adoption in June 2021. Altamonte Springs mandates

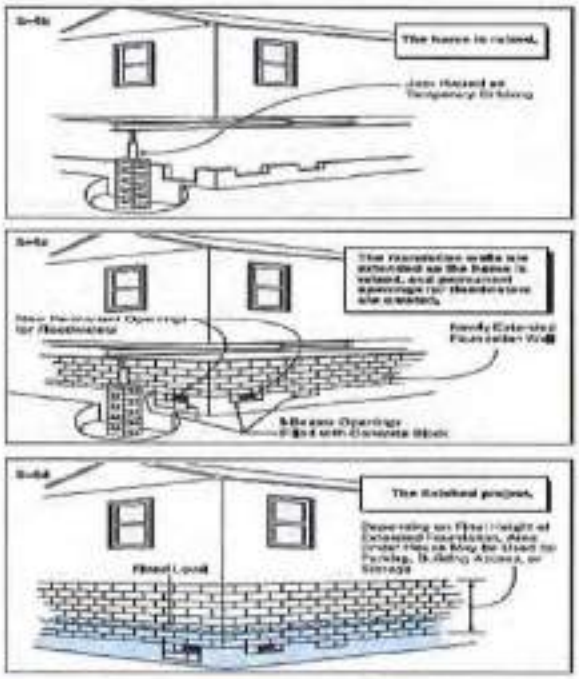
that new residential construction, new non-residential construction, and substantial improvement/damage to existing structures should have their lowest floor, including basement, elevated to at least one-foot above the base flood elevation (BFE).

Buildings where there is an enclosed area below the lowest floor elevation are required to be designed for the entry and exit of floodwater. Dry floodproofing techniques such as these reduce damage from flooding while allowing waters to enter the structure.

Most forms of development in the floodway are prohibited unless certification by a professional engineer is issued stating that the development will result in no increase in flood levels.

Standards for subdivisions are required to build utilities that minimize flood damage and must provide adequate drainage.

Figure 11. Home elevation



Home elevation is a dry floodproofing technique that reduces damage from flooding by allowing water to enter the structure.

Responsible party Deadline
Altamonte Springs

Goal 1: Enhance Public Awareness and Education on Flood Risk (Continuously)

Objective 1.1 – Develop and distribute annual floodplain outreach materials covering flood insurance, Elevation Certificates, floodproofing, and emergency preparedness to all properties throughout the City, including in or near the SFHA.

Objective 1.2 – Maintain and expand the Flood Information page on the City's website, providing FIRMettes, links to the FEMA Map Service Center, and public access to Elevation Certificate records.

Objective 1.3 – Participate in at least one public outreach event each year (e.g., City sponsored events, Flood Awareness Week, or Florida Preparedness Month).

Goal 2: Maintain the condition of the City's MS4 to reduce flooding. (Continuously)

Objective 2.1 – Perform ongoing maintenance and repair of City's MS4.

Objective 2.2 – Repair MS4 facilities as necessary and in a timely manner.

Objective 2.3 – Include stormwater retrofit projects in the City's Capital Improvement Plan (CIP) to support long-term community resilience.

Goal 3: Provide annual updates to the City's Stormwater Master Plan. (Continuously)

Objective 3.1 – Continue to assess inventory both public and private stormwater infrastructure within the City, to allow for refining of basin delineations.

Objective 3.2 – When funding becomes available, complete elevation certificates for private and public buildings located within the Special Flood Hazard Areas, reassess erosion and sedimentation control along Little Wekiva River Qualitatively assess historical flooding along the Little Wekiva River, lakes and other major water bodies within the City using best available information to include but not limited to: surveyed high water marks; lake level records; photographs of flooding; repetitive loss records; flood elevations predicted by drainage studies; new and more accurate topography; etc.

Objective 3.3 – Continue to refine the limits of existing flood hazards based on more accurate topographic information, also convert several Zone "A" SFHAs to Zone "AE" SFHAs (when appropriate? Or maybe when supported by affected community officials??)

Goal 4: Increase Community Resilience and Emergency Preparedness (Continuously)

Objective 4.1 – Maintain the Comprehensive Emergency Management Plan to ensure consistency with state and federal requirements, local resource availability, and to reflect current flood-prone areas, critical facilities, and concepts of operations.

Objective 4.2 – Integrate real-time rainfall and stream gauge data from City or external monitoring stations into emergency management systems to improve flood warning capabilities.
Objective 4.3 – Conduct, at least one annually, a tabletop or functional exercise of the City's emergency management plans with participation from stakeholder departments.

Objective 4.4 – Pursue grant funding opportunities to support mitigation projects for public infrastructure.

# Introduction

## Overview

The City of Casselberry was incorporated in 1940 in Seminole County. It is in the southern portion of the county east of the Cities of Longwood and Altamonte Springs and to the west of Winter Springs. Casselberry covers 7.5 square miles. The city's population is 32,120.

Figure 1. City of Casselberry

Source: Seminole County GIS

## Involvement with the National Flood Insurance Program (NFIP)

Casselberry has been participating in the Community Rating System (CRS) program since 2019 and has been awarded class 8 until March 2026. The City will be promoted to Class 7 starting April 1, 2026. It also has a history with the National Flood Insurance Program (NFIP).

Figure 2. National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

# Risk Assessment

Communities must address four components when assessing risk. They identify hazards, profiling hazard events, inventorying assets, and estimating loss. This process measures the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural hazards (FEMA). This section of the community profile assesses the potential of risk with respect to floodplain management in Casselberry. There are six categories that address the four components identified in risk assessment as defined through the Federal Emergency Management Agency (FEMA): identifying flood zones within the city, surface water locations, property value within each flood zone, insurance statistics, vulnerable populations, and critical facilities.

## FEMA Flood Zones

Figure 3. FEMA Flood Zone, Percentage of Acreage for the City of Casselberry, 2013, Non-Submerged Acres

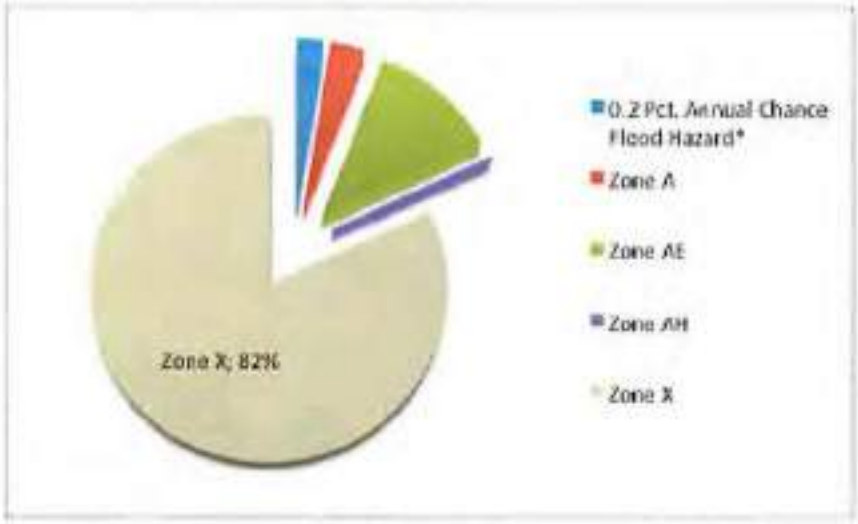



Figure 3 shows that the percentage of non- submerged acreage. Non-submerged acreage refers to land not inundated by surface water. The largest quantity of the acreage is found in the northern portion of the city by Lake Kathryn and along the floodway situated towards Gee Creek. Flood Zone A accounts for 3.31% of the floodplain total. Flood Zone AE comprises 12.13% of the city's total non- submerged acreage, Zone AH accounts for 0.31% and Zone X covers 82%.

## Surface Water

Table 1. Percentage of Total Surface Water

| Surface Water Name | Percentage, % |
|---|---|
| **Total Surface Water** | **15.9** |
| Lake Howell | 49.1 |
| Lake Kathryn | 9.1 |
| Mddle Lake Triplet | 5.4 |

Source: Seminole County GIS Dept.

Figure 4. Lake Howell

Source: Seminole County Water Atlas

Figure 5. Lake Kathryn

Source: Seminole County Water Atlas

There are 39 bodies of surface water located in Casselberry. Surface water accounts for 15.9% of the total land make– up. Table 1 displays the three largest bodies of water and their percentage of total surface water in Casselberry.

All bodies of water are located in or within close proximity of the Special Flood Hazard Area (SFHA).

Lake Howell is the largest body of water, accounting for 49.1 % of the total percentage of surface water. It is located in the southeast section of the city and the boundaries are shared with Seminole County.

The second largest body of water is Lake Kathryn comprising 9.1% of the total percentage of surface water. The lake is located in the northern portion of the city.

Middle Lake Triplet is located in the central section of the city and spans 5.4% of the total percentage of surface water.

## Property Value

Table 2. Total Appraised Value by Flood Zone, 2025

| Flood Zone | Total Appraised Value |
|---|---|
| Zone X with 0.2 Pct | $43,092,703 |
| Zone A | $179,471,725 |
| Zone AE | $639,421,125 |
| Zone AH | $11,189,976 |
| Zone X without 0.2Pct | $3,020,278,441 |
| **Grand Total** | **$3,893,453,970** |

Source: City of Casselberry GIS

Casselberry has over three billion dollars of appraised property value that could be vulnerable to flood risk damage. The largest property value is found in Flood Zone X where 78% of the city's total property value is found. Flood Zone AE contains the second largest appraised value that could be vulnerable to flood risk damage at 16% of the total value of Casselberry. There is close to $190 million dollars of property value at risk in the remaining flood zones.

## Flood Insurance

Table 3. Policy Statistics for the City of Casselberry, as of 08/07/2025

| Policies in-Force | Insurance in-Force Whole | Written Premiums in-Force |
|---|---|---|
| 359 | $91,031,400 | $285,605 |

Source: FEMA

Casselberry has 359 insurance policies in force according to the Federal Emergency Management Agency. The total coverage amount for these insurance policies is $91,031,400, while the premium paid for them is $285,605

Table 4. Loss Statistics for the City of Casselberry, as of 08/07/2025

| Closed Paid Losses | Total Payments |
|---|---|
| 43 | $433,648.15 |

Source: FEMA

Total losses that had been paid in full in Casselberry accounted for 43 claims and total payment made to claimants since 1978 is numbered at $433,648.15.

## Vulnerable Population

Vulnerable populations are those segments of the community who are considered to be most prone to risk in the time of hazard. In Casselberry, 15.1% of the population is over the age of 65.

## Repetitive Loss Property

Repetitive Loss properties are defined as those properties that have been flooded on more than one occasion. Casselberry does not have repetitive loss properties. In the event that properties do begin to meet that criteria, then there are buy-out programs that can be initiated to purchase the property. These measures protect residents from harm and remove development from the floodplain (Schwab, 2014).

## Manufactured Homes

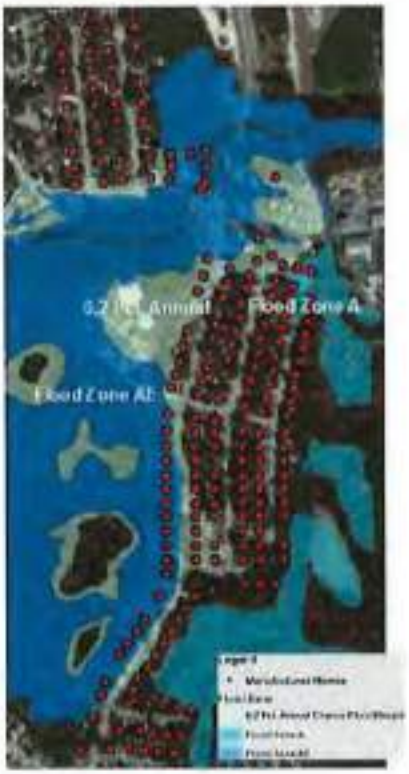
There are over one thousand manufactured homes located in Casselberry.

The two largest communities are Summerloch Green (formerly known as Lake Kathryn Estates) and Seminole Speedway. While the vast majority of these manufactured homes are located in Flood Zone X, there are a considerable number of ones that are not.

Casselberry restricts manufactured home placement to existing manufactured home parks or sub-divisions. The city's land development code regulates standards for manufactured homes.

New or substantially improved manufactured homes in the Special Flood Hazard Area (SFHA) are required to elevate the lowest floor on a permanent foundation to no lower than one foot above the base flood elevation and must be properly anchored to resist flotation, collapse, or any form of movement. Drainage paths around structures are also required to be designed to guide water away from manufactured homes.

Figure 6. Selected Manufactured Homes in Floodplain Hazard



### Critical Facilities

Critical facilities are defined as those facilities that provide a critical function and should be protected from flood damage. Seminole County has identified four critical facilities throughout Casselberry and the emergency function they provide in times of crisis. No facility is located in the Special Flood Hazard Area (SFHA).

## Mitigation Measures

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters (FEMA). The policies adopted by Casselberry work to achieve these objectives and prevent flood damage. This community profile analyzes mitigation policies, including Future Land Use, Environmental Efforts, Stormwater Management, and Building Practices, all of which are identified through the city's Comprehensive Plan and Land Development Code. Casselberry is an active member of the Local Mitigation and Resiliency Strategy and works to make sure all plans are up to date.

### Future Land Use

An analysis of the Future Land Use Map by Flood Zone for the City of Casselberry is aggregated below. This analysis reflects the hazards that come with developing in flood prone areas.

Table 5. 0.2 Percent Annual Chance Flood Hazard* by Future Land Use (FLU), 2025

| Casselberry Future Land Use | Percentage of Acres, % |
|---|---|
| **0.2 Pct. Annual Chance Flood Hazard*** | **2.51** |
| LDR- Low Density Residential | 43.51 |
| MDR- Medium Density Residential | 34.78 |
| REC- Recreation/Open Space | 8.77 |
| COMM- Commercial | 5.42 |
| PUB- Public Service | 3.83 |
| IND- Industrial | 2.86 |
| HDR- High Density Residential | 0.23 |

Source: City of Casselberry GIS

In Casselberry 43.51% of the total Future Land Use in the 0.2 Percent Annual Chance Flood Hazard is planned for Low Density Residential. Medium Density Residential accounts for 34.78% of the total future land use. Recreation and Open Space makes up 8.77%. The remaining uses account for about 13% of the total make- up.

Table 6. Flood Zone A by Future Land Use (FLU), 2025

| Casselberry Future Land Use | Percentage of Acres, % |
|---|---|
| **Flood Zone A** | **3.18** |
| MDR- Medium Density Residential | 35.09 |
| LINR- Low Density Non-Res/Medium Density Res. | 21.64 |
| REC- Recreation/Open Space | 18.79 |
| LDR- Low Density Residential | 9.99 |
| PUB- Public Service | 8.72 |
| IND- Industrial | 1.02 |

Source: City of Casselberry GIS

A third of Flood Zone A is planned for Medium Density Residential. The next largest future planned use is for Low- Density Non- Residential/ Medium Density Residential at 21.64%. Recreation and Open Space is the third largest future land use in the zone at 18.79%. Low- Density Residential future is also a notable make-up of the zone with 9.99%. The Future Land Use indicates that the city has planned residential units for about 67% of Flood Zone A. The remaining uses account for close to 33% of the total future make- up.

Table 7. Flood Zone AE by Future Land Use (FLU), 2025

| Casselberry Future Land Use | Percentage of Acres, % |
|---|---|
| **Flood Zone AE** | **22.30** |
| MDR- Medium Density Residential | 35.09 |
| LINR- Low Density Non-Res/Medium Density Res. | 21.64 |
| REC- Recreation/Open Space | 18.79 |
| LDR- Low Density Residential | 9.99 |
| PUB- Public Service | 8.72 |
| MTMU – Major Thoroughfare Mixed Use | 4.75 |

Source: City of Casselberry GIS

The largest Future Land Use category in Flood Zone AE is Medium Density Residential at 35.09%. Low Density Non-Res/Medium Density Residential accounts for 21.64% of the total acreage, followed by Recreation and Open Space at 18.79%. The following most notable future uses include Low Density Residential at 9.99%, Public Service at 8.72% and Major Thoroughfare Mixed Use at 4.75%. The remaining future uses account for close to 1% of the total acreage.

Table 8. Flood Zone AH by Future Land Use (FLU), 2025

| Casselberry Future Land Use | Percentage of Acres, % |
|---|---|
| **Flood Zone AH** | **0.14** |
| COMM- Commercial | 41.59 |
| MTMU – Major Thoroughfare Mixed Use | 28.85 |
| LINR- Low Density Non-Res/Medium Density Res. | 22.03 |
| LDR- Low Density Residential | 7.01 |
| MDR- Medium Density Residential | 0.52 |

Source: City of Casselberry GIS

The largest Future Land Use category in the Flood Zone AH is Commercial at 41.59%. Medium Density Residential accounts for 28.85% of the total acreage, followed by Major Thoroughfare Mixed Use at 22.03%. The remaining uses account for close to 8% of the total percentage of acres.

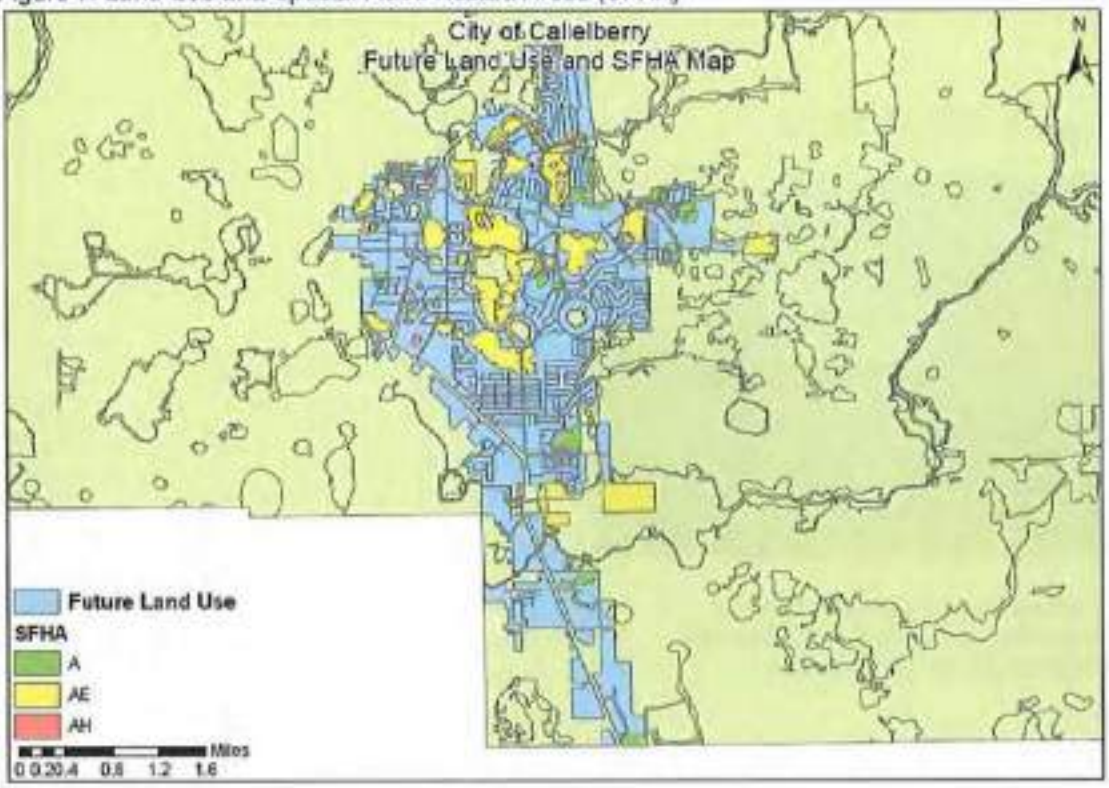
Table 9. Flood Zone X by Future Land Use (FLU), 2025

| Casselberry Future Land Use | Percentage of Acres, % |
|---|---|
| **Flood Zone X** | **71.87** |
| LDR- Low Density Residential | 39.18 |
| MDR- Medium Density Residential | 20.55 |
| MTMU – Major Thoroughfare Mixed Use | 14.31 |
| COMM- Commercial | 7.42 |
| LINR- Low Density Non-Res/Medium Density Res. | 4.24 |
| PUB- Public Service | 4.15 |
| REC- Recreation/Open Space | 3.73 |
| IND- Industrial | 3.15 |
| HDR- High Density Residential | 1.97 |
| HINR- High Density Non-Res/Medium Density Res. | 0.44 |

Source: City of Casselberry GIS

Low Density Residential comprises 39.18% of Flood Zone X. The next largest future uses are Medium Density Residential 20.55% and Major Throughfare accounts for 14.31%. Commercial future use accounts for 7.42%. Low Density Non- Residential/ Medium Density Residential future use accounts for 4.24% followed by Public Service at 4.15% and Recreation and Open Space at 3.73%. The remaining future uses account for about 6% of the total percentage of acres.

Figure 7. Land Use and Special Flood Hazard Areas (SFHA)




## Environmental Efforts

Environmental policies are a means to which a municipality values its natural heritage. Best practices in Floodplain Management mitigation include preserving natural areas located in floodplains or directing open space/ recreation uses towards them.

Casselberry's policies require that the natural functions of wetlands and floodplains be protected. Land use restrictions have been implemented on the specific use of floodplains. These include limits on natural vegetation removal, limitations on intensities and densities of development, and restrictions on fill placement in floodplains.

## Erosion and Sedimentation Control

The city's comprehensive plan sets objectives to protect minerals, soils and vegetation. These policies protect bodies of water and wetlands from siltation.

Best management practices have been identified to control erosion and restrictions on clearing of sites prior to development.

Sediment controls include temporary and permanent sodding and seeding, sediment basins and rock dams, silt fences, and vegetative buffers.

These practices help reduce harmful pollutants in stormwater runoff from the construction site.

Figure 8. Wetland Protection

Casselberry has identified Wetland Protection as a policy in which to help mitigate against flood damage.

Figure 9. Sediment Basins

Sediment Basins are temporary ponds built on construction sites to capture eroded or disturbed soils. Casselberry requires this sedimentation practice.

## Stormwater Management

Stormwater management practices are an essential component in mitigating flood damage. Policies enacted at the municipal level are essential in controlling stormwater run-off to create minimal damage impact on property.

In 2017, Casselberry adopted Stormwater and Lake Management master plan. This plan guides stormwater management for the city and identifies stormwater policies that are integral in maintaining a quality system.

Casselberry is committed to protecting water resources and maintaining the natural drainage systems and watercourses.

The city also adheres to best management practices that reduce run-off and improve water quality.

Casselberry's objectives are met by implementing policies such as dry retention/ detention facilities, wet detention/ retention facilities and promoting techniques such as low-impact development, which adheres to pre- development hydrologic conditions.

Figure 10. Wet Retention/Detention Facility

Dry Retention/ Detention facilities are used to drain between rainfall events.

Figure 11. Low Impact Development

Source: Lowimpactdevelopment.org.

Low Impact Development is a form of development that adheres to pre-development conditions. Examples include green roofs and permeable surfaces.

## Building Practices

Building Practices are essential in mitigating flood damage to structures located in flood prone zones. There are different practices that help protect property and citizens.

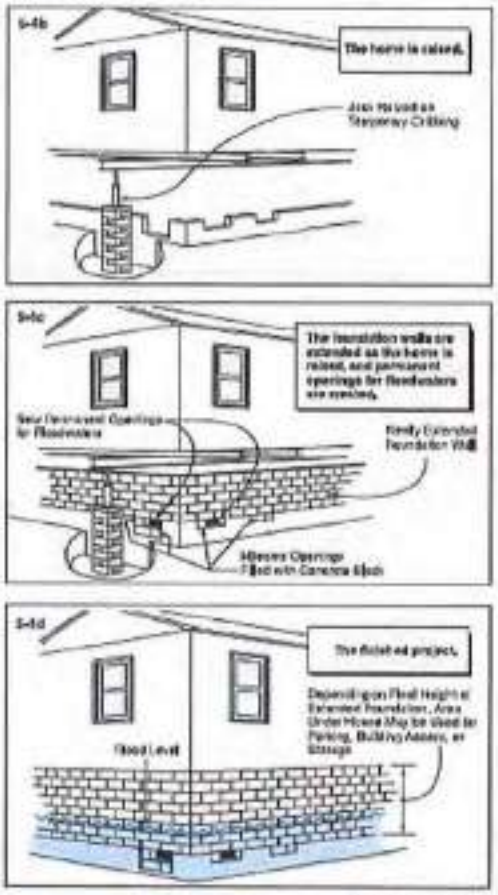
Casselberry mandates that new residential and non-residential construction or substantial improvements to existing ones should have their lowest floor including basement elevated to a foot above the base flood elevation (BFE).

Buildings where there is an enclosed area below the lowest floor elevation are required to be designed for the entry and exit of floodwater. Dry floodproofing techniques such as these reduce damage from flooding while allowing water to enter the structure.

Most forms of development in the floodway are prohibited unless certification by a professional engineer is issued stating that the development will result in no increase in flood levels.

Standards for subdivisions are required to build utilities that minimize flood damage and must provide adequate drainage.

Figure 12. Home Elevation



Source: FEMA

Home elevation is a dry floodproofing technique that reduces damage from flooding by allowing water to enter the structure.

**City of Casselberry Floodplain Management Goals, Objectives, & Action Items**

Goal 1: Improve the City's outreach programs.

**Objective 1.1** Implement outreach initiatives and educational events to inform insurance agents and property owners on the availability of flood-related data from the City.

- ***Action Item 1.1*** *Pursuant to Objective 1.1, leverage social media to promote flood awareness, especially during hurricane season; publish an annual newsletter to provide flood-related resources to the residents and educate residents on storm preparedness.*
- ***Action Item 1.2*** *Pursuant to Objective 1.1, host at least one educational event within the City to engage and inform stakeholders about flood risks and available resources.*

*Responsible Party: City of Casselberry Public Works Department and Community Information Manager*

*Timeline:* Continuously

Goal 2: Improve Accessibility, Quality, and Management of Flood Data

**Objective 2.1** Provide surveyors with access to County-maintained benchmark data.

**Objective 2.2** Maintain and regularly update the building elevation database using as-built plans or survey data.

**Objective 2.3** Incorporate approved Letters of Map Change (LOMCs) into the latest FEMA floodplain maps and make updated maps available to the public upon request.

Goal 3: Implement and Enhance Flood Protection to Reduce Risk

**Objective 3.1** Ensure post-development or redevelopment stormwater runoff (peak flow and volume) does not exceed pre-development conditions based on applicable design storm criteria per City Code.

**Objective 3.2** Review and update the City's floodplain regulations as needed.

- ***Action Item 3.1*** *Pursuant to Objective 3.1, require a certified floodplain manager (CFM) to perform routine stormwater modeling reviews during the engineering permitting process. This evaluation will follow the City's design storm criteria outlined in the City's*

*Stormwater Management Codes.*

*Responsible Party: City of Casselberry Public Works Department*

*Timeline: Continuously*

Goal 4: Maintain and Enhance the City's Drainage Infrastructure

**Objective 4.1** Continue routine maintenance of key drainage infrastructure components, including major pipes, ditches, and control structures, and improve maintenance where feasible.

**Objective 4.2** Identify, evaluate, and implement capital improvement projects (CIPs) that support flood risk mitigation, where feasible and sustainable.

- ***Action Item 4.1*** *Pursuant to Objective 4.1, routinely update the City's Geographic Information System (GIS) with current as-built drainage data.*

  *Responsible Party: City of Casselberry Public Works Department and IT Division*

  *Timeline: Continuously*

- ***Action Item 4.2*** *Pursuant to Objective 4.2, complete a minimum of 2,000 LF of cured-in-place pipe lining.*

  *Responsible Party: City of Casselberry Public Works Department*

  *Timeline: December 2026*

- ***Action Item 4.3*** *Pursuant to Objective 4.2, update the City's Stormwater Master Plan*

  *Responsible Party: City of Casselberry Public Works Department*

  *Timeline: December 2027*

# Introduction

## Overview

The City of Lake Mary was incorporated in 1973 in Seminole County. It is located in the northern section of the county, with the city of Sanford located to the north and east, the city of Longwood to the south, and unincorporated areas to its west. Lake Mary has a land area of 9.16 square miles. As of the 2020 census, the city's population is 16,798 with 6,940 households within the City

Figure 1. City of Lake Mary

Source: Seminole County GIS

## Involvement with the National Flood Insurance Program (NFIP)

Lake Mary became eligible for the National Flood Insurance Program's (NFIP) Community Rating System (CRS) on October 1, 2009. The municipality currently ranks as a class five, receiving 2,500-2,999 Credit Points (cT) during its classification.

The discount percentage for properties found in the Special Flood Hazard (SFHA) is twenty-five percent while the percent discount for non-Special Flood Hazard Area (SFHA) properties is ten percent. The city's participation in the program is listed as current.

Figure 2. National Flood Insurance Program


Source: Seminole County GIS

# Risk Assessment

Communities must address four components when assessing risk. They are; identifying hazards, profiling hazard events, inventorying assets, and estimating loss. This process measures the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural hazards (FEMA). This section of the community profile assesses the potential of risk with respect to floodplain management in Lake Mary. There are six categories that address the four components identified in risk assessment as defined through the Federal Emergency Management Agency (FEMA): identifying flood zones within the city, surface water locations, property value within each flood zone, insurance statistics, vulnerable populations, and critical facilities.

Figure 3. FEMA Flood Zone, Percentage of Acreage for the City of Lake Mary 2025

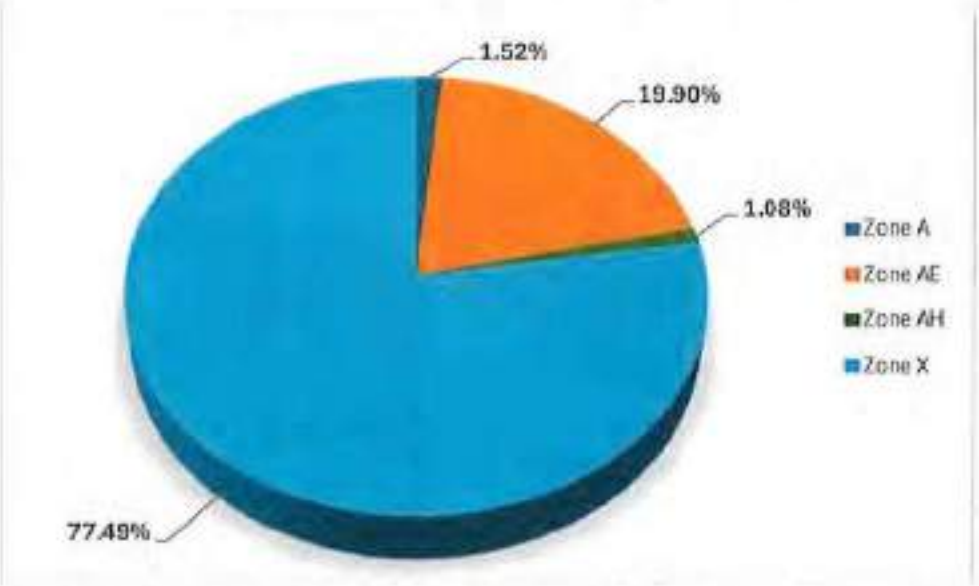



Figure 3 shows the percentage of each of the FEMA flood zones within City of Lake Mary. Of the total land within jurisdictional boundaries, Zone A accounts for 1.52% (or 96.26 acres), Zone AE accounts for 19.90% (or 1,263.71 acres), Zone AH accounts for 1.08% (or 68.57 acres), while Zone X accounts for 77.49% (or 4,916.78 acres) of the land found in City of Lake Mary.

## Surface Waters

Table 1. Percentage of Total Surface Water

| Surface Water Name | Percentage of Acres, % |
|---|---|
| Total Surface Water as a percentage of Total Land | 9.48% |
| West Crystal Lake | 35.15% |
| Big Lake Mary | 16.23% |
| East Crystal Lake | 11.59% |

Source: City of Lake Mary PW Dept.

There are 28 bodies of surface water located in Lake Mary. Surface water accounts for 9.48 % of the total land make–up. Table 1 displays the three largest bodies of water and their percentage of total surface water in the city boundaries.

All bodies of water are in or within close proximity of the Special Flood Hazard Area (SFHA).

Most of these lakes are closed basin lakes with no outlets. Rainfall causes closed basin lakes to rise faster than drain. The result is a variation in water elevation that can lead to flooding.

The largest body of surface water is West Crystal Lake accounting for 35.15% of the total surface water. The lake is in the Special Flood Hazard Area (SFHA).

The second largest body of surface water is Big Lake Mary, comprising 16.23% of the total surface water.

East Crystal Lake is 11.59% of the total surface water in Lake Mary.

Figure 4. West Crystal Lake

Source: Seminole County Water Atlas

Figure 5. East Crystal Lake, Aerial View

Source: Seminole County Water Atlas

## Property Value

Table 2. Total Appraised Value by Flood Zone

| FLOOD ZONE | TOTAL JUST VALUE |
|---|---|
| A | 11,120,705 |
| AE | 100,246,545 |
| AH | 6,965,235 |
| X (0.2 Pct. Annual Chance Flood Hazard) | 1,609,836 |
| X (Area of Minimal Flood Hazard) | 3,317,689,026 |
| | 3,437,631,347 |

Lake Mary has $3,437,631,347 dollars in property value that could be exposed to flood damage. 97% of the appraised value is found in Flood Zone X. Flood Zone AE has 2.9%, and Flood Zones A, AH, and X (0.2 percent annual chance flood hazard) each have under one percent of the total appraised value found in Lake Mary.

## Insurance Statistics

Table 3. Policy Statistics for the City of Lake Mary, as of 2025

| Community Name (Number) | Policies in Force | Total Coverage | Total Written Premium + FPF | Total Annual Payment |
|---|---|---|---|---|
| ALTAMONTE SPRINGS | 854 | $189,679,200 | $475,985 | $590,074 |
| CASSELBERRY | 359 | $91,031,400 | $285,605 | $348,144 |
| LAKE MARY | 225 | $75,498,000 | $148,183 | $187,354 |
| LONGWOOD | 212 | $69,536,000 | $153,053 | $193,563 |
| OVIEDO | 738 | $240,483,400 | $469,000 | $578,704 |
| SANFORD | 635 | $174,076,600 | $431,793 | $544,644 |
| UNINCORPORATED | 4,031 | $1,255,662,000 | $2,626,890 | $3,244,406 |
| WINTER SPRINGS | 640 | $191,974,600 | $503,580 | $610,458 |

Lake Mary has 225 policies in force according to the Federal Emergency Management Agency. The total amount coverage for these insurance policies $75,498,000, while the premium paid for them was $187,354.

Table 4. Loss Statistics for the City of Lake Mary

| Total Losses | Closed Losses | Open Losses | CWOP Losses | Total Payments |
|---|---|---|---|---|
| 13 | 2 | 0 | 11 | $3,016 |

Source: FEMA

Total property losses in Lake Mary are numbered at 13 properties since 1978. Losses that had been paid in full were accounted for 2 claims and losses that had been closed without payment (CWOP) was numbered at 11. There were no losses that had not been paid in full (Open Losses). Total payments made to claimants since 1978 is $3,015.68.

## Vulnerable Population

Vulnerable populations are those segments of the community who are most prone to risk in the time of hazard. 18.9% of the population is over the age of 65.

## Repetitive Loss Property

Repetitive Loss properties are defined as those properties that have been flooded on more than one occasion. Lake Mary does not have repetitive loss properties.

If properties do begin to meet that criteria then there are buy-out programs that can be initiated to purchase the property. These measures protect residents from harm and remove development from the floodplain (Schwab, 2014).

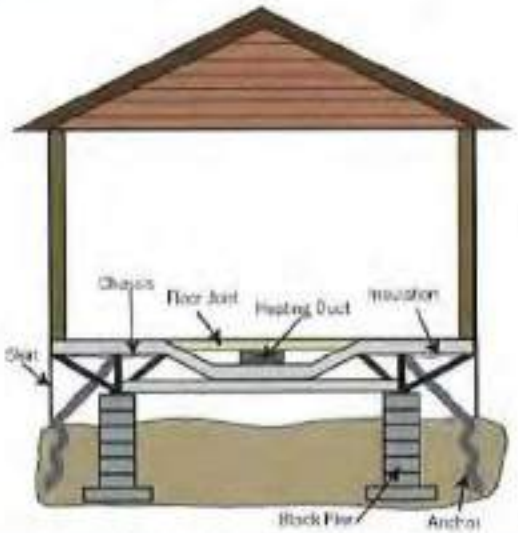
## Manufactured Homes

Lake Mary is limited in the number of manufactured homes located throughout its boundaries.

For those manufactured homes located in the Special Flood Hazard (SFHA) mitigation policies that reduce flood damage include elevating the foundation to 1.5 feet above the base flood elevation (BFE).

Manufactured homes must also be anchored to a foundation system to prevent floatation or varying forms of movements.

Figure 6. Manufactured Home Foundations




Chassis are the steel frames of manufactured homes. Block piers and anchors are building methods utilized to mitigate flood damage.

## Critical Facilities

Critical facilities are defined as those facilities that provide a critical function and should be protected from flood damage. Seminole County has identified 16 critical facilities throughout Lake Mary and the emergency function they provide in times of crisis. No facility is located in the Special Flood Hazard Area (SFHA).

# Mitigation Measures

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters (FEMA). The policies adopted by Lake Mary work to achieve these objectives and prevent flood damage. This community profile analyzes mitigation policies including Future Land Use, Environmental Efforts, Stormwater Management, and Building Practices all identified through the city's Comprehensive Plan and Land Development Code. Lake Mary is an active member of the Local Mitigation Strategy and works to make sure all plans are up to date.

## Future Land Use

An analysis of the Future Land Use Map by Flood Zone for the City of Lake Mary is aggregated below by percentage of total acreage in the flood zone. This analysis reflects the potential hazards that come with planning for growth in flood prone areas.

Table 4. Flood Zone A by Future Land Use.

| Future Land Use (Flood Zone A) | Percentage of Acres, % |
|---|---|
| LDR - Low Density Residential | 22.89 |
| COM - Commercial | 14.58 |
| REC - Recreation | 13.19 |
| IND - Industrial | 11.03 |
| PUB - Public / Semi-Public | 9.26 |
| HIPTI - High Intensity Planned Development Target Industry | 6.76 |
| RCOM - Restricted Commercial | 6.51 |
| HTM - High-Tech Medical | 6.29 |
| HDR - High Density Residential | 4.33 |
| DDD - Downtown Development District | 3.37 |
| MDR - Medium Density Residential | 1.58 |
| RR - Rural Residential | 0.88 |
| OFF - Office | 0.26 |
| LMDR - Low-Medium Density Residential | 0.05 |

Source: City of Lake Mary PW Dept.

Zone A accounts for 1.52% (or 96.26 acres) of all land area within the City. Low Density Residential is the largest future planned use for Flood Zone A with 22.89% of the total percentage of acreage. The second largest planned use is Commercial at 14.58%. Recreation comprises 13.19% and Industrial consists of 11.03% of the total percentage acreage. Public and Semi Public is 9.26% and High Intensity Planned Development is 6.76%. Restricted Commercial and High Tech & Medical are 6.51% and 6.239% respectively. The remaining future uses account for 6.14% of Flood Zone A.

Table 5. Flood Zone AE by Future Land Use.

| Future Land Use (Flood Zone AE) | Percentage of Acres, % |
|---|---|
| LDR - Low Density Residential | 49.35 |
| REC - Recreation | 14.28 |
| RR - Rural Residential | 13.64 |
| LMDR - Low-Medium Density Residential | 8.20 |
| PUB - Public / Semi-Public | 5.17 |
| MDR - Medium Density Residential | 5.03 |
| COM - Commercial | 2.78 |
| HTM - High-Tech Medical | 0.42 |
| DDD - Downtown Development District | 0.38 |
| OFF - Office | 0.37 |
| IND - Industrial | 0.28 |
| HDR - High Density Residential | 0.06 |
| COUNTY LDR - Seminole County Low Density Residential | 0.02 |

Source: City of Lake Mary PW Dept.

Zone AE accounts for 19.90% (or 1,263.71 acres) of all land area within the City. Low Density Residential accounts for 49.35% of the total percentage of acreage in Flood Zone AE. Recreation is planned for 14.28% of the flood zone. Rural Residential comprises 13.64% of future land use. Low-Medium Density Residential accounts for 8.20% of the planned future use in Lake Mary. Medium Residential use makes up 5.17%; Commercial is 2.78%. The remaining categories account for the last 1.53% of the future land use in Lake Mary.

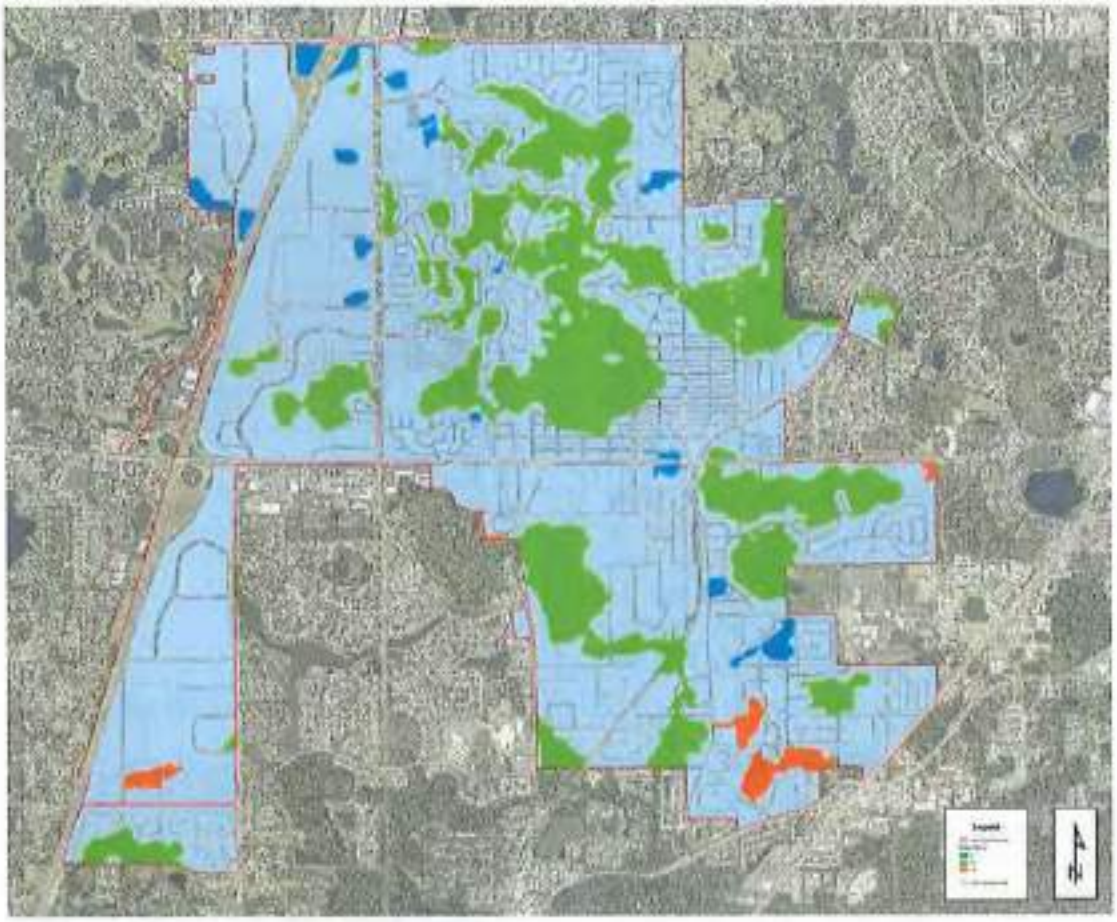
Table 6. Flood Zone AH by Future Land Use.

| Future Land Use (Flood Zone AH) | Percentage of Acres, % |
|---|---|
| LDR - Low Density Residential | 75.10 |
| IND - Industrial | 18.37 |
| MUMT - Mixed-Use Midtown | 3.04 |
| PUB - Public / Semi-Public | 2.30 |
| COM - Commercial | 0.99 |
| REC - Recreation | 0.14 |
| RCOM - Restricted Commercial | 0.06 |

Source: City of Lake Mary PW Dept.

Zone AH accounts for 1.08% (or 68.57 acres) of all land area within the City and is dominated by Low Density Residential future use at 75.10% of the total percentage of acreage. The next largest category is Industrial at 18.37%. Mixed-Use Mid-Town comprises 3.04% of the planned future use. Public/ Semi-Public accounts for 2.30% of future land use. Commercial, Recreation, and Restricted Commercial complete the future make-up with 0.99%, 0.14%, and 0.06%, respectively.

Figure 7. Future Land Use and Special Flood Hazard Areas (SFHA)



## Environmental Efforts

Environmental policies are a means to which a municipality values its natural heritage. Best practices in Floodplain Management mitigation include preserving natural areas located in floodplains or directing open space/ recreation uses towards them.

Lake Mary has multiple policies to protect the shorelines, flood hazard areas, watercourses, and natural wetlands to help create natural flood mitigation.

By doing this, Lake Mary believes they can minimize flood damage, keep a stable tax base, and minimize the amount of future projects needed to protect against floods. The city abides by the requirements set in the Tile 44 Code.

Figure 8. Wetlands in Lake Mary

## Erosion and Sedimentation

The city's comprehensive plan sets objectives to protect minerals, soils, and vegetation. These policies protect bodies of water and wetlands from siltation.

The City of Lake Mary tries to manage dredging, mining, paving, grading, filling, and drilling to protect against erosion in the city.

Figure 9. Shore erosion in Lake Mary

## Stormwater Management

Stormwater management practices are an essential component in mitigating flood damage. Policies enacted at the municipal level are essential in controlling stormwater run- off to create minimal damage impact on property.

Lake Mary has plenty of retention ponds and drainage facilities to manage run-off.

Recently, Lake Mary raised stormwater fees to make sure the fund doesn't dry up and money is set aside to fix drains and other facilities.

## Building Practices

Building Practices are essential in mitigating flood damage to structures located in flood prone zones. There are different practices that help protect property and citizens

Lake Mary mandates that new residential and non-residential construction or substantial improvements to existing ones should have their lowest finished floor including basement elevated to at a foot and a half above the base flood elevation (BFE).

In areas delineated on the FIRM and base flood elevation (BFE), Flood Plain Administrators must follow certain steps. They must try to find any flood data from state and federal governments. When information can't be found, the structure must be built three and a half feet above the tallest adjacent ground.

When a developer wants to build a regulatory floodway, an analysis must take place to prove the base flood elevation (BFE) won't rise.

Structures must be built to minimize or eliminate flood damage. There must be enough drainage to reduce flooding.

Figure 10. House elevation

An example of a house built on stilts to keep it from flooding, a common technique of dry floodproofing.

## Goals and Objectives

Goal 1: Develop and enforce policies and regulations to support effective floodplain management.

Objective 1.1- Develop and enforce land use policies, plans and regulations to discourage or prohibit inappropriate location of structures or infrastructure components in areas of high risk to flooding.

Objective 1.2- Continue to participate in the National Flood Insurance Program and the associated Community Rating System.

Objective 1.3- Continue to develop and enforce building and land development codes that are effective in addressing the flooding hazards threatening the community.

Objective 1.4- Establish and enforce regulations to ensure that public and private property maintenance is consistent with minimizing vulnerabilities to flooding.

Goal 2: Work in conjunction with the County and other local governments to create and support floodplain management throughout the county.

Objective 2.1- Continue to collaborate in the countywide Floodplain Management Plan and associated Floodplain Management Team working group.

Objective 2.2- Coordinate with the County and other local government agencies to further develop and administer outreach programs to gain participation in mitigation programs by business, industry, institutions and community groups.

Objective 2.3- Comply with interagency agreements and collaborate with the County and other local governments to improve multi-jurisdiction / multi-agency coordination

# Introduction

## Overview

The City of Longwood was incorporated in 1917 in Seminole County. It is located in the southwest portion of the county east of the City of Winter Springs and north of the City of Casselberry. Incorporated Longwood covers 5.6 square miles. The city's population is 16,794.

Figure 1. City of Longwood

Source: Longwood GIS

## Involvement with the National Flood Insurance Program (NFIP)

Longwood currently has an application in review to join Community Rating System (CRS). Even though the city has not been a member of CRS, the city implements many of the CRS and National Flood Insurance Program (NFIP) procedures and programs.

Figure 2. National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

# Risk Assessment

Communities must address four components when assessing risk. They are identifying hazards, profiling hazard events, inventorying assets, and estimating loss. This process measures the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural hazards (FEMA). This section of the community profile assesses the potential of risk with respect to floodplain management in Longwood. There are six categories that address the four components identified in risk assessment as defined through the Federal Emergency Management Agency (FEMA): identifying flood zones within the city, surface water locations, property value within each flood zone, insurance statistics, vulnerable populations, and critical facilities.

## FEMA Flood Zones

Figure 3. FEMA Flood Zone, Percentage of Acreage for the City of Longwood, 2013, Non-Submerged Acres

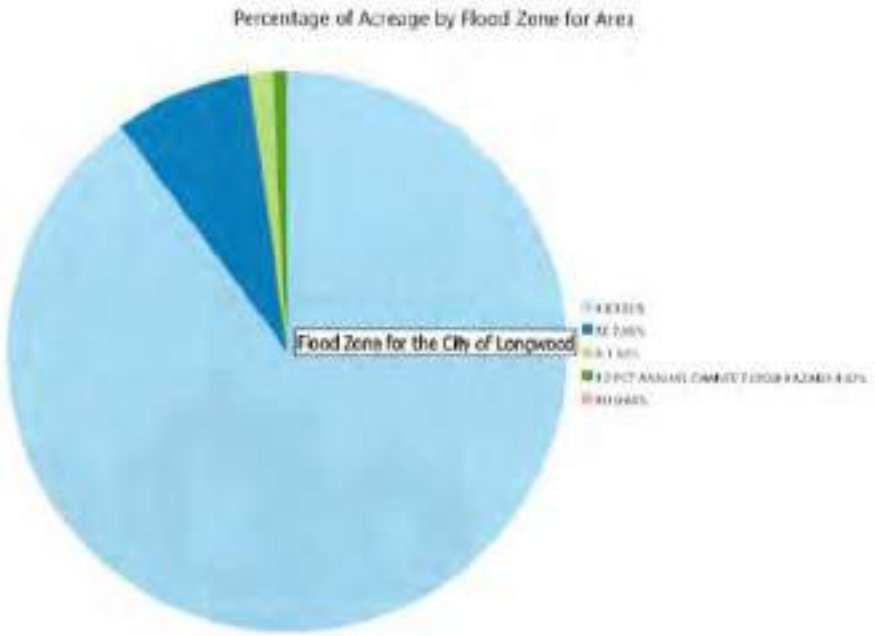



Figure 3 shows that the percentage of acreage located in the various flood zones found within the Incorporated City of Longwood limits. Zone A accounts for 1.38% of the floodplain total. Flood Zone AE comprises 7.95%, Zone AH accounts for 0.04% and Zone X covers 89.81%.

## Surface Water

Figure 4 – Longwood Surface Waters

There are 389 bodies of surface water located in Longwood. These consist of natural lakes and man-made water bodies for stormwater treatment. Surface water accounts for 14.8% of the total land make– up.

Source: City of Longwood GIS

## Flood Insurance

Table 1. Policy Statistics for the City of Longwood, as of 7/28/2025

| Policies in-Force | Insurance in-Force Whole | Written Premiums in-Force |
|---|---|---|
| 203 | $65,707,000 | $143,995 |

Source: FEMA

Longwood has 203 insurance policies in force according to the Federal Emergency Management Agency. The total coverage amount for these insurance policies is $65,707,000 while the premium paid for them is $143,995

Table 2. Most Recent Loss Statistics for the City of Longwood

| Closed Paid Losses | Total Payments |
|---|---|
| 30 | $126,385.16 |

Source: FEMA

Total losses that had been paid in full in Longwood accounted for 30 claims and total payments made to claimants since 1978 is numbered at $126,385.1

## Vulnerable Population

Vulnerable populations are those segments of the community who are considered to be most prone to risk in the time of hazard. In Longwood, 20.1% of the population is over the age of 65.

## Repetitive Loss Property

Repetitive Loss properties are defined as those properties that have been flooded on more than one occasion. Longwood does not have repetitive loss properties. In the event that properties do begin to meet that criterion then there are assistance programs that can be initiated to assist the property owner. These measures protect residents from harm and remove development from the floodplain (Schwab, 2014).

## Manufactured Homes

Manufactured homes only account for 0.2% of the total number of residential units in the city of Longwood. This is approximately 10 manufactured homes.

Longwood restricts manufactured home placement to existing manufactured parks or sub-divisions. The city's land development code regulates standards for manufactured homes.

New or substantially improved manufactured homes in the Special Flood Hazard Area (SFHA) are required to elevate the lowest floor on a permanent foundation to no lower than one foot above the base flood elevation and must be properly anchored to resist flotation, collapse or any form of movement. Drainage paths around structures are also required to be designed to guide water away from manufactured homes.

## Critical Facilities

Critical facilities are defined as those facilities that provide a critical function and should be protected from flood damage. The City of Longwood has four-teen critical facilities throughout Longwood. The use of the critical facilities varies from providing first response and medical services, shelters and assisted living to keeping the city's utility infrastructure functioning. No facility is located in a Special Flood Hazard Area (SFHA).

# Mitigation Measures

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters (FEMA). The policies adopted by Longwood work to achieve these objectives and prevent flood damage. This community profile analyzes mitigation policies including Future Land Use, Environmental Efforts, Stormwater Management, and Building Practices all identified through the city's Comprehensive Plan and Land Development Code. Longwood is an active member of the Local Mitigation Strategy and works to make sure all plans are up to date.

## Future Land Use

An analysis of the Future Land Use Map by Flood Zone for the City of Longwood is aggregated below. This analysis reflects the hazards that come with developing in flood prone areas.

Table 3. 0.2 Percent Annual Chance Flood Hazard* by Future Land Use (FLU), 2025

| Longwood Future Land Use | Percentage of Acres, % |
|---|---|
| **0.2 Pct. Annual Chance Flood Hazard*** | **0.66** |
| LDR- Low Density Residential | 43.2 |
| COMM- Commercial | 27.3 |
| IND- Industrial | 8.8 |
| INF – Infill and Mixed use | 11.8 |
| CON - Conservation | 7.4 |
| MDR- Medium Density Residential | 1.5 |

*of the 100 Year Flood

Source: City of Longwood GIS

Table 4. Flood Zone A by Future Land Use (FLU), 2025

| Longwood Future Land Use | Percentage of Acres, % |
|---|---|
| **Flood Zone A** | **0.06** |
| IND- Industrial | 44.7 |
| MDR- Medium Density Residential | 37.9 |
| PUB – Public/Institutional | 13.9 |
| LDR- Low Density Residential | 1.9 |
| COM Commercial | 1.7 |

Source: City of Longwood GIS

Table 5. Flood Zone AE by Future Land Use (FLU), 2025

| Longwood Future Land Use | Percentage of Acres, % |
|---|---|
| **Flood Zone AE** | **7.6** |
| LDR- Low Density Residential | 52.91 |
| REC- Recreation/Open Space | 18.01 |
| MDR- Medium Density Residential | 15.75 |
| COMM- Commercial | 4.01 |
| PUB- Public Service | 3.26 |
| LINR- Low Density Non-Res/Medium Density Res. | 3.20 |
| HDR- High Density Residential | 2.13 |
| IND- Industrial | 0.47 |
| HINR- High Density Non-Res/Medium Density Res. | 0.27 |

Source: City of Longwood GIS

Table 6. Flood Zone AH by Future Land Use (FLU), 2025

| Longwood Future Land Use | Percentage of Acres, % |
|---|---|
| **Flood Zone AH** | **0.01** |
| LDR- Low Density Residential | 100.00 |

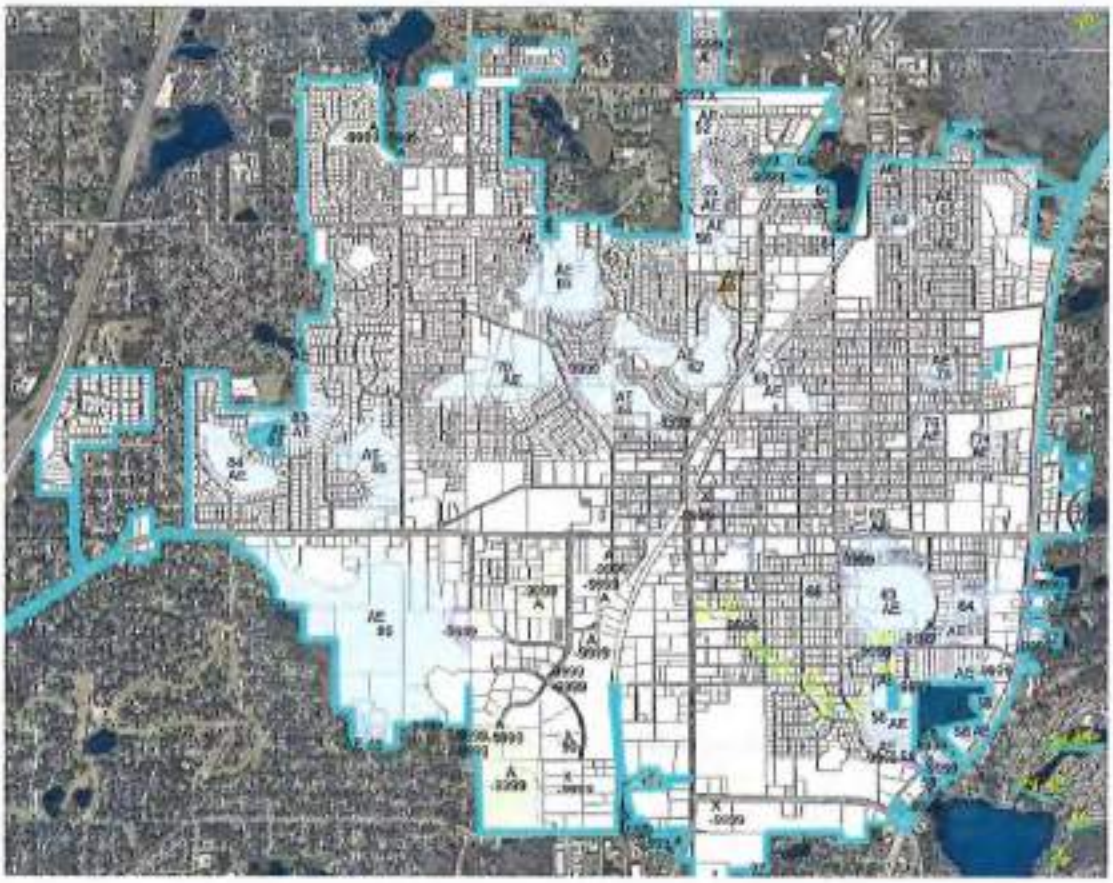
Source: City of Longwood GIS

Table 7. Flood Zone X by Future Land Use (FLU), 2025

| Longwood Future Land Use | Percentage of Acres, % |
|---|---|
| **Flood Zone X** | **91.12** |
| LDR- Low Density Residential | 40.8 |
| COMM- Commercial | 21.2 |
| IND- Industrial | 13.7 |
| MDR- Medium Density Res. | 10.4 |
| PUB- Public/Institutional | 6.8 |
| INF- Infill and Mixed use | 3.4 |
| CON- Conservation | 1.4 |
| HIS- Historic | 1.3 |
| STA- Station Core | 1.1 |

Source: City of Longwood GIS

Figure 5. Land Use and Special Flood Hazard Areas (SFHA)



0.2 PCT ANNUAL CHANCE FLOOD HAZARD
A
AE
AH
X

## Environmental Efforts

Environmental policies are a means to which a municipality values its natural heritage. Best practices in Floodplain Management mitigation include preserving natural areas located in floodplains or directing open space/ recreation uses towards them.

Longwood's policies require that natural functions of wetlands and floodplains be protected. Land use restrictions have been implemented on the specific use of floodplains. These include, limits on natural vegetation removal, limitations on intensities and densities of development, and restrictions on fill placement in floodplains.

## Erosion and Sedimentation Control

The city's comprehensive plan sets objectives to protect minerals, soils and vegetation. These policies protect bodies of water and wetlands from siltation.

Best management practices have been identified to control erosion and restrictions on clearing of sites prior to development.

Sediment controls include temporary and permanent sodding and seeding, sediment basins and rock dams, silt fences, and vegetative buffers.

These practices help reduce harmful pollutants in stormwater runoff from the construction site.

Figure 6. Island Lake Wetland Area

Longwood has identified Wetland Protection as a policy in which to help mitigate against flood damage.

Figure 7. Sediment Basins

Turbidity barriers are placed in ponds and lakes to prevent sediment from impacting the pond when construction is adjacent to a water body. Longwood requires this sedimentation practice.

## Stormwater Management

Stormwater management practices are an essential component in mitigating flood damage. Policies enacted at the municipal level are essential in controlling stormwater run- off to create minimal damage impact on property.

In 2019, Longwood adopted a new floodplain and flood zone development ordinance. This ordinance guides stormwater management in critical flood zones for the city and identifies stormwater policies that are integral in maintaining a quality system.

Longwood is committed to protecting water resources and maintaining the natural drainage systems and watercourses.

The city also adheres to best management practices that reduce run-off and improve water quality.

Longwood's objectives are met by implementing policies such as dry retention/ detention facilities, wet detention/ retention facilities, limiting impervious area and promoting techniques such as low- impact development, which adheres to pre-development hydrologic conditions.

Figure 8. Dry Pond

Dry Detention/ Detention facilities are used to drain between rainfall events.

Figure 9. Low Impact Development – Rain Garden

Source: Lowimpactdevelopment.org

Low Impact Development is a form of development that adheres to pre-development conditions. An example is the use of rain gardens for water treatment.

## Building Practices

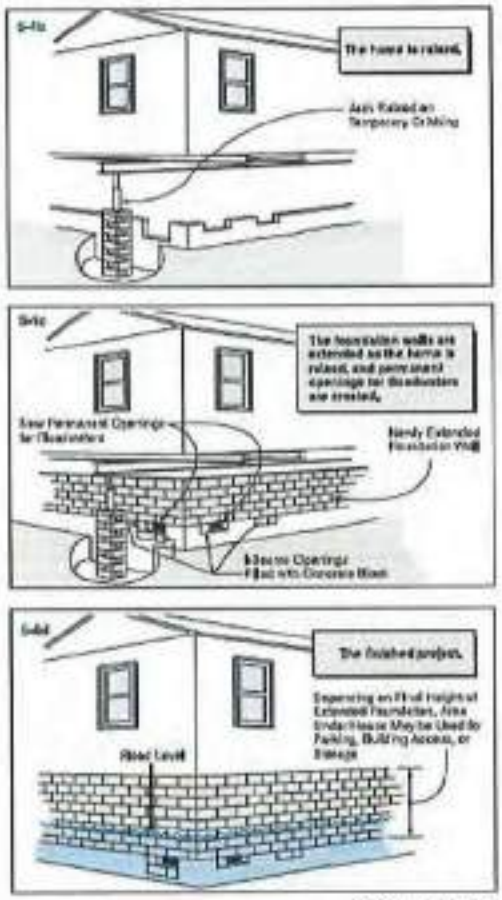
Building Practices are essential in mitigating flood damage to structures located in flood prone zones. There are different practices that help protect property and citizens.

Longwood mandates that new residential and non- residential construction or substantial improvements to existing ones should have their lowest floor including basement elevated to at least 1- foot above the base flood elevation (BFE).

Buildings where there is an enclosed area below the lowest floor elevation are required to be designed for the entry and exit of floodwater. Dry floodproofing techniques such as these reduce damage from flooding while allowing waters to enter the structure.

Most forms of development in the floodway are discouraged. Any impact to a flood zone requires proper mitigation through compensating flood storage. By providing compensating flood storage to replace flood storage impacted by the development; there will not be an increase in flood levels.

Figure 10. Home Elevation



Source: FEMA

Home elevation is a dry floodproofing technique that reduces damage from flooding by allowing water to enter the structure.

**City of Longwood Floodplain Management Goals, Objectives, & Action Items**

**Goal 1:** Improve City's GIS web viewer.

**Objective 1.1** Improve City's online maps to provide property owners easy access to flood related data.

*Responsible Party:* City of Longwood Public Works and IT Departments

*Timeline:* Continuously

**Goal 2:** Increase residents' knowledge of assistance programs related to recovery from flooding

**Objective 2.1** Include information flyers in mailings.

**Objective 2.2** Provide information at local city events.

**Objective 2.3** Implement annual outreach public meetings and educational events to educate insurance agents and property owners the availability of flood related data from the City.

**Goal 3:** Implement stricter water treatment requirements on new development located in flood prone basins.

**Objective 3.1** Require new developments in flood prone basins to hold the 100 Year storm on property.

*Responsible Party: City of Longwood Public Works*

*Timeline: Continuously*

**Goal 4:** Maintain and improve the City's drainage infrastructure to help mitigate flood risk, where feasible, sustainable, and appropriate in context.

**Objective 4.1** Continue and, where feasible, improve routine maintenance of the City's key drainage infrastructure components, such as major pipes, ditches, and key control structures.

**Objective 4.2** Identify, evaluation, and implement (where feasible) potential capital improvement project.

*Responsible Party:* City of Longwood Public Works Department

*Timeline: Continuously*

**Goal 5**: Update the City's Subdivision and Stormwater Manual.

**Objective 5.1** Update the manual to include the most current best management practices.

**Objective 5.2** Update the manual to include sections on low impact development and guidance on alternative water treatment methods, such as rain gardens.

*Responsible Party:* City of Longwood Public Works Department

*Timeline: Continuously*

Introduction

### Overview

The City of Oviedo was incorporated in 1925 in Seminole County, FL. It is located in the southern portion of the county, bordered by Orange County to the south, the City of Winter Springs to the west and rural unincorporated Seminole County to the north and east. The city currently covers 16 square miles. The current population is 41,934 residents.

**Figure 1. City of Oviedo**

Source: Seminole County GIS Dept

### Involvement with the National Flood Insurance Program (NFIP)

Oviedo became eligible for the National Flood Insurance Program's (NFIP) Community Rating System (CRS) on October 1, 2008.

The city is currently ranked as a class five (5) community. Oviedo received 2522 credit points during its most recent classification audit. This allows for a 25% discount on insurance premiums through the NFIP for those homes within a Special Flood Hazard Area (SFHA).

**Figure 2. Flooding Twin Rivers Golf Course**

Source: City of Oviedo

# Risk Assessment

Communities must address four components when assessing risk. They are identifying hazards, profiling hazard events, inventorying assets, and estimating loss. This process measures the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural hazards. This section of the community profile assesses the potential of risk with respect to floodplain management in Oviedo. There are six categories that address the four components identified in risk assessment as defined through the Federal Emergency Management Agency (FEMA): identifying flood zones within the city, surface water locations, property value within each flood zone, insurance statistics, vulnerable populations, and critical facilities.

### FEMA Flood Zones

**Figure 3. Percentage of Acreage in the City of Oviedo, 2024, FEMA Flood Zone,**


Source: City of Oviedo P/W Administration

Figure 3 shows the percentage of acreage found in the 100 Year Floodplain. Approximately 88% of Flood Zone AE is found in the corridors of the Little Econlockhatchee and Econlockhatchee Rivers.

## Surface Water

**Table 1. Percentage of Total Surface Water**

| Surface Water Name | Percentage, % |
|---|---|
| Econlockhatchee River | 44.8 |
| Horseshoe North Lake | 13.3 |
| Little Econlockhatchee River | 7.4 |

Source: Seminole County GIS Dept.

Figure 4. Econlockhatchee River

Figure 5. Horseshoe North

Source City of Oviedo Public Works

Figure 6. Little Econlockhatchee River

Source City of Oviedo Public Works

There are fourteen (14) natural bodies of surface water that are located throughout Oviedo, and they cover approximately 5% of the total land area; all water bodies are located within SFHAs. Table 1 displays the three largest bodies of water and their percentage of total surface water in Oviedo. Oviedo also has many natural wetland areas that are also treated as surface waters. Many of the wetland areas are within closed basins, this makes these areas prone to flood risks during major storm events.

The largest surface water in Oviedo is the Econlockhatchee River, which is located in the eastern portion of the city. It consists of 44.8% of the total surface water.

Horseshoe North Lake accounts for 13.3% of the total surface water and is in the southeast area of Oviedo, partially within the Live Oak Subdivision. The third largest body of surface water is the Little Econlockhatchee River, which covers 7.4%. This river is also found in the eastern area of the city. Figures 4,5,6 highlight these surface waters.

## Flood Insurance

As of 2025, Oviedo has over 4 billion dollars in appraised property value that could be vulnerable to flood risk damage. Over 80% of the appraised property is found in Flood Zone X. It is important to note that as of 08/22/2024 there are 728 NFIP flood insurance policies covering properties worth $234,820,000 in the SFHA. In 2024 the city executed a Letter of Map Revision (LOMR) city wide to FEMA, this changed those areas within a SFHA without a Base Flood Elevation (BFE) known as Zone A to Zone AE (with a BFE). This provides more accuracy for development or insurance assessment purposes. The city-wide LOMR was approved by FEMA and went into effect August 15, 2024

## Vulnerable Population

Vulnerable populations are those segments of the community which are considered to be most prone to risk in the time of upcoming hazards, approximately 14.7% of the city's population is over the age of 65. There are three (3) residential facilities with elder/special care provisions. All three (3) of these residential facilities are outside of a SFHA.

## Repetitive Loss Property

Repetitive Loss properties are defined by the NFIP as those properties that have been flooded on more than one occasion and have had multiple insurance claims over a ten-year period. Oviedo currently does not have any repetitive loss properties.

If buildings begin to meet the definition of a repetitive loss and they finished floor elevation is not to the most current city code, the address is flagged by permit issuance to track improvement values. Tracking the buildings will ensure significant improvements do not rise above 50% of fair market value during a ten year period starting from the date of the first flood loss. The most recent city code requires buildings to have the finished floor elevation built two (2) feet above the published Base Flood Elevation. There are mitigation grants available through FEMA or potential buy out programs that can be initiated to purchase the property if necessary. These measures protect residents from harm and remove development from the floodplain (Schwab, 2014). The city currently does not have any homes that fall in the repetitive loss category.

### Manufactured Homes

Oviedo does not currently have land zoned for mobile home parks. There is one manufactured home built on slab within the city limits.

### Critical Facilities

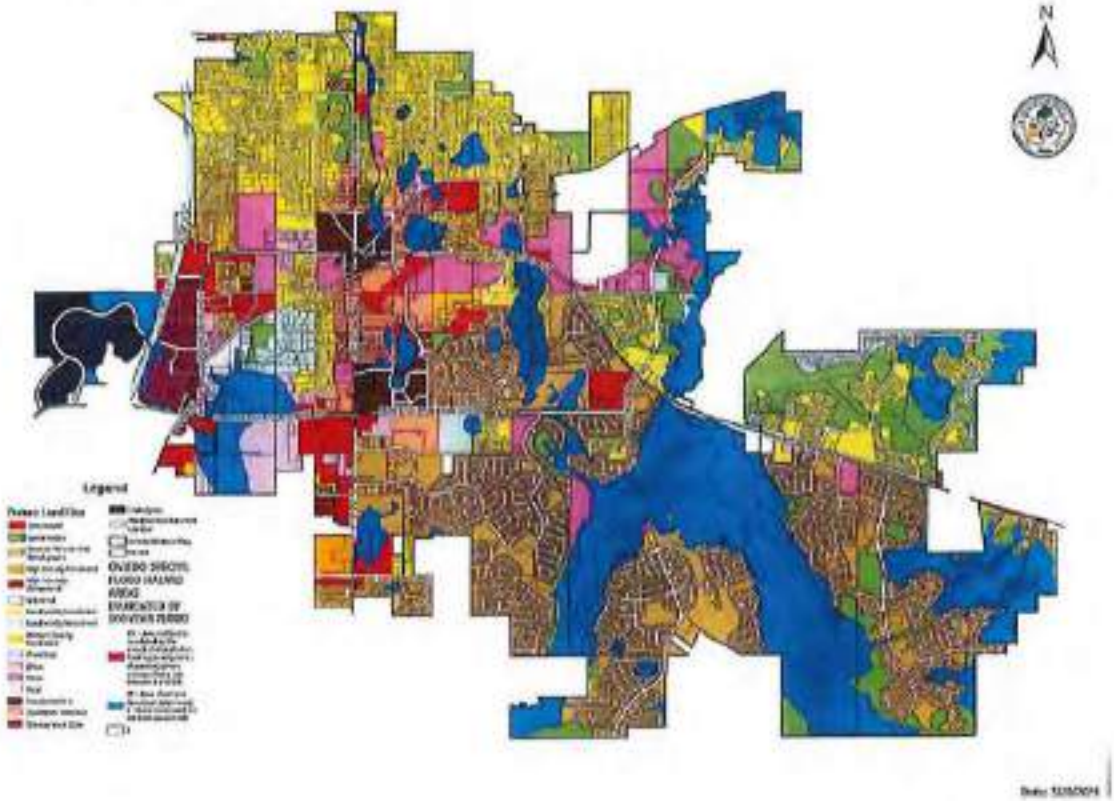
There are thirty-six (36) critical facilities found in Oviedo. None of these facilities are located within a SFHA.

## Mitigation Measures

### Future Land Use

An analysis of the Current Future Land Use Map by Flood Zone (non- submerged acres) for the City of Oviedo is shown below. This reflects the hazards that come with developing in flood prone areas. The map shows the Future Land Use codes and flood zones, including where these areas overlap. The Future Land Use code used on this map include CM (Commercial), HDR (High Density Residential), LDR (Low Density Residential), and PUD (Planned Unit Development). The flood zones include A and AE, which are all part of the Special Flood Hazard Area (SFHA), as well as X (minimal area of flooding), and all other values.

Figure 6. Future Land Use and SFHA.



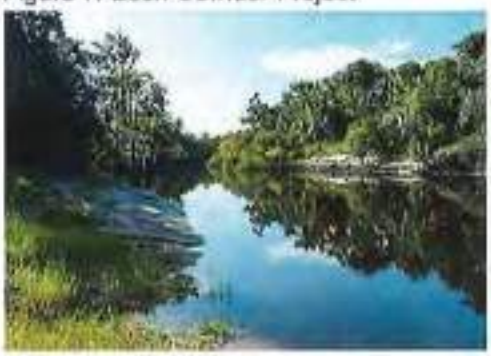
## Environmental Efforts

Oviedo prohibits construction within the floodway that would diminish the functional floodway capacity. Wide setbacks from waterbodies are enforced as part of the Land Development Code. An example is the Econlockhatchee (Econ) corridor project shown in Figure 7.

An analysis of the Future Land Use Map found in Section 2.2 that 37% of Future Use is designated for Conservation in Flood Zone A and over 62% in Flood Zone AE.

Municipal policies are intended to minimize potential flood damage by directing recreation, conservation, and common open space to those areas within the Flood Zone, this creates clusters of residential development outside of the SFHA.

Figure 7. Econ Corridor Project



The Econ Corridor Project is a conservation effort to protect environmentally sensitive lands. These forms of mitigation policies prevent development in the flood prone area.

## Erosion and Sediment Control

Oviedo 's mitigation policies are intended to minimize erosion and control sedimentation. Construction projects associated with the development order application are required to submit an erosion and sediment control plan to ensure that certain measures are properly addressed. These measures are also required to follow through with state environmental standards. A dedicated city inspector ensures that sediment erosion controls remain in place for the duration of the project and logs inspections through GIS Survey.

Mitigation policies intended to support minimizing erosion and controlling sedimentation include leaving steep slopes and wetlands undisturbed, leaving the natural drainage pattern of the land to the most practicable standard and promoting natural vegetative cover.

The benefits of these policies include but are not limited to; reducing the velocity of run-off and increasing infiltration into the soil.[1] Other policies identified to control sedimentation from construction sites are practicing run-off control measures and sediment trapping measures.

## Stormwater Management

Stormwater runoff is an essential component in helping to mitigate flood damage. Oviedo requires development mimic the flow patterns of the natural drainage pattern. This policy

[1] Section 10.2 Drainage and Stormwater Management and Erosion Control, Article X. Floodways, Floodplains, Drainage, and Erosion of Oviedo's Land Development Code

promotes conservation efforts to protect wetlands throughout the city. The functions of these natural resources are to retain and infiltrate water.

Performance and design standards for stormwater management are found in Oviedo's Engineering Standards Manual. These standards are directed towards implementing effective policies that help circumvent extensive damage in the event of severe stormwater flooding. Performance standards include implementing best management practices requiring the retention/detention of stormwater, managing discharge levels and protecting water quality. Quality of natural water bodies are preserved by multiple Best Management Practices (BMPs) within the city's stormwater management program. BMPs include but are not limited too; a dedicated city owned Streetsweeper and Jet Vac, nutrient filters, retention and detention areas, an Adopt A Road Program, and annual water quality testing of natural surface waters

Figure 8. Oviedo Drainage and Stormwater
Management & Erosion Control highlights retention, wetland and conservation areas.

## Building Practices

Oviedo building practices mandate that development orders or permits cannot be issued within floodplains until development adheres to certain goals. These goals include.

1. Developments and public facilities are located and constructed to minimize or eliminate flood damage.
2. Adequate drainage is provided.
3. No new construction is permitted in the floodway.

4. Construction in the floodplain also mandates that no new construction or improvements take place unless the lowest floor is elevated to no lower than two feet above the base flood elevation (BFE).

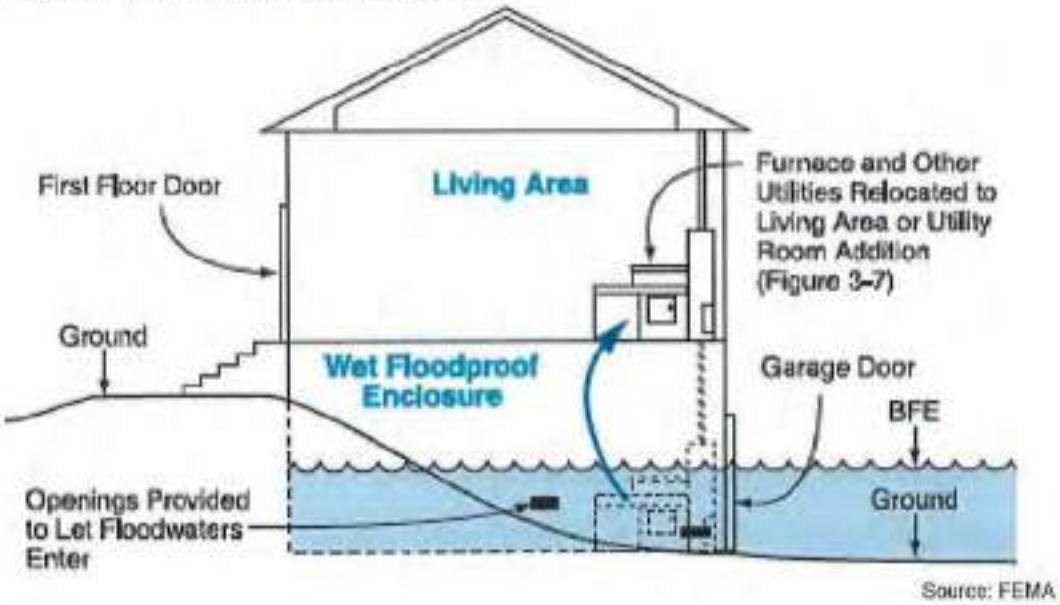
For non-residential buildings, flood-proofing techniques can be used in lieu of elevating the structure above the BFE. These techniques are required to be certified by a professional engineer. Floodproofing techniques identified by the city are intended to withstand flood depths, pressure, impact, and prevent the passage of water in buildings below the BFE. Figure 9 displays several FEMA floodproofing techniques including, elevating the primary residence above the BFE and elevating HVAC equipment to an upper floor.

In the Land Development Code, final plat approvals are not authorized unless the boundaries of the floodplain are identified on the plat. The city requires the following language to be printed on all plats:

***"Use of land within a Floodplain or Floodway is substantially restricted by the City of Oviedo"***

All new residential and commercial structures located within a Special Flood Hazard Area are required to submit an original Elevation Certificate to the Engineering Department prior to a Certificate of Occupancy being issued. Elevation Certificates are available to residents via an interactive GIS Map

Figure 9. FEMA Floodproofing Techniques.




Source: FEMA

| | Responsible party | Deadline |
|---|---|---|
| | City of Oviedo | Annual |

**Goal 1**: - To maintain the functionality of the Master Conveyance System in Oviedo

Objective 1.1- Perform on-going maintenance of tributaries and canals.

Objective 1.2 – Inspect and ensure all thirty-one (31) Major Outfalls are clear and functioning each year.

Objective 1.3- Perform on-going maintenance of the city-wide storm water master system.

| | | |
|---|---|---|
| | City of Oviedo | Annual |

**Goal 2:** - To maintain the quality of the street drainage facilities in Oviedo

Objective 2.1- Perform on-going maintenance of street sweeping and jet vacuum cleaning of storm drains.

Objective 2.2- Perform on-going inspections and maintenance of street culverts and storm sewers and cleaning and marking of storm sewer inlets.

| | | |
|---|---|---|
| | City of Oviedo | Annual |

**Goal 3**: - To improve the quality of stormwater in Oviedo

Objective 3.1- Perform measures to further reduce pollutants from the city's MS4 systems to surface water within the incorporated limits.

Objective 3.2- To identify and retrofit areas on roadways and within the older portions of the city without stormwater management systems and implement infrastructure.

| | | |
|---|---|---|
| | City of Oviedo | Annual |

**Goal 4:** - To continue with educational campaigns focusing on topics such as non-point source pollutants, fertilizing responsibly, wetland and floodplain values and to work in partnership with city residents and developers to maintain the balance of the city's eco-system.

# Introduction

## Overview

The City of Sanford was incorporated in 1877 in Seminole County. It is located in the northern section of the county, with the City of Lake Mary located to the south and Volusia County to the north.
Unincorporated Seminole County borders Sanford on its west and east boundaries.

Sanford covers 23.97 square miles making it the largest municipality within Seminole County. The city's population is 68,225.

Source: Seminole County GIS

Figure 1. City of Sanford

## Involvement with the National Flood Insurance Program (NFIP)

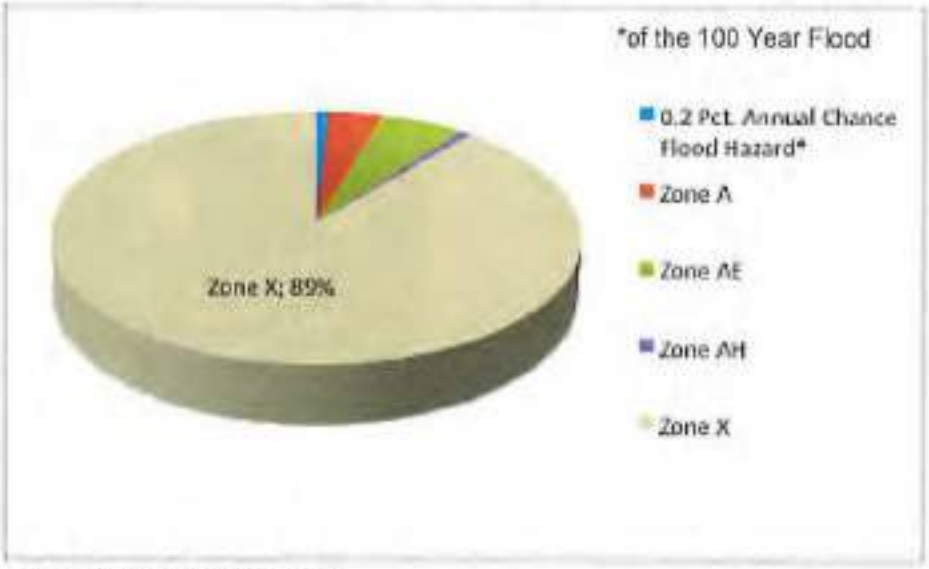
Sanford was accepted into the National Flood Insurance Program's (NFIP) Community Rating System (CRS) on October 1, 2016 with an initial Rating of 7.

Figure 2.National Flood Insurance Program

## Risk Assessment

Communities must address four components when assessing risk. They are identifying hazards, profiling hazard events, inventorying assets, and estimating loss. This process measures the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural hazards (FEMA). This section of the community profile assesses the potential of risk with respect to floodplain management in Sanford. There are six categories that address the four components identified in risk assessment as defined through the Federal Emergency Management Agency (FEMA): identifying flood zones within the city, surface water locations, property value within each flood zone, insurance statistics, vulnerable populations, and critical facilities.

Figure 3. FEMA Flood Zone, Percentage of Acreage for the City of Sanford, 2013, Non-Submerged Acres




Source: Seminole County GIS Dept

Figure 3 shows that the percentage of non- submerged acreage found in Sanford. The 0.2 percent Annual Chance Flood Hazard of the 100 Year Floodplain accounts for 0.9% of the total percentage of non- submerged acreage. Much of this zone is located near the banks of Lake Monroe. Non-submerged acreage refers to land not inundated by surface water. Flood Zone A accounts for 3.6% of the total percentage of non- submerged acres. Flood Zone AE comprises 5.7% and is predominantly found in the surrounding areas of Lake Monroe. Flood Zone AH is 0.79% of the total make- up. Flood Zone X is 89% of the total percentage of non- submerged acres.

## Surface Water

Table 1. Percentage of Total Surface Water

| Surface Water Name | Percentage, % |
|---|---|
| **Total Surface Water** | **6.2** |
| Lake Monroe | 53.8 |
| Little Lake Mary | 5.6 |
| Lake Ada | 5.4 |

Source: Seminole County GIS Dept.

There are 23 bodies of surface water located in Sanford. Surface water accounts for 6.2% of the total land make– up. Table 1 displays the three largest bodies of water and their percentage of total surface water in Sanford.

All bodies of water are located in or within close proximity of the Special Flood Hazard Area (SFHA).

The vast majority of these lakes are closed basin lakes with no outlets. Rainfall causes closed basin lakes to rise faster than drain. The result is a variation in water elevation that can lead to flooding. Lake Monroe is a notable exception connecting to the St. Johns River.

Lake Monroe is the largest lake in Sanford accounting for 53.8% of the total surface water make up of the city. The body of water is located to north of the city.

Little Lake Mary is the second largest body of water comprising 5.6% of the total surface water and is located in the southern section of this jurisdiction.

Lake Ada is also located in the southern portion of Sanford. This body of water makes up 5.4% of the total percentage of surface water.

Figure 4. Lake Monroe, Aerial View

Source: Seminole County Water Atlas

Figure 5. Little Lake Mary

Source: Seminole County Water Atlas

## Property Value

Table 2. Total Appraised Value by Flood Zone, 2020

| FLOOD ZONE | TOTAL JUST VALUE |
|---|---|
| A | 53,737,984 |
| AE | 152,995,083 |
| AH | 10,549,661 |
| X (0.2 Pct. Annual Chance Flood Hazard) | 60,633,699 |
| X (Area of Minimal Flood Hazard) | 5,488,000,314 |
| | 5,765,916,741 |

Sanford has over 5.7 billion dollars in appraised value that could be vulnerable to flood risk damage. The largest property value risk is found in Flood Zone X, with 95%. Flood Zone AE accounts for the second largest appraised value that could be vulnerable to risk at 2.7%. Those properties zone A, AH, and within the 0.2 Pct. Annual Chance Hazard of the 100-year flood have over 124 million dollars of property risk.

## Insurance Policies

Table 3. Policy Statistics for the City of Sanford, as of 09/20/2020

| Policies in Force | Insurance in Force Whole | Written Premiums in Force |
|---|---|---|
| 635 | $174,076,600 | $431,793 |

Total property losses in Sanford are numbered at 79 properties since 1978. Losses that had been paid in full accounted for accounted for 41 claims and losses that had been closed without payment (CWOP) were totaled at 28 claims. There were no losses that had not been paid in full. Total payments made to claimants since 1978 is valued at $609,850.70.

## Vulnerable Population

Vulnerable populations are those segments of the community who are considered to be most prone to risk in the time of hazard. 12.65% of the population is over the age of 65.

## Repetitive Loss Property

Repetitive Loss Properties are defined as those properties that have been flooded on more than one occasion. Sanford eight repetitive loss properties.

If properties do begin to meet that criteria then there are buy out programs that can be initiated to purchase the property. These measures protect residents from harm and remove development from the floodplain (Schwab, 2014).

## Manufactured Homes

Figure 6. Manufactured Home Flood Hazard

Manufactured home communities, such as the one showed above in Sanford are vulnerable populations susceptible to flood hazard without proper mitigation measures.

Sanford has a large mobile home park located in its southern jurisdiction that could be vulnerable to flood inundation. Figure 6 illustrates the potential risk. The City's Land Development Code sets standards for these forms of residences. Mitigation policies that help protect flood damage to manufactured homes include setting the permanent foundation to no lower than two feet above the base flood elevation and must have an adequate anchored foundation system to circumvent flotation and other forms of movement.

## Critical Facilities

Critical facilities are defined as those facilities that provide a critical function and should be protected from flood damage. Seminole County has identified 66 critical facilities throughout Sanford and the emergency function they provide in times of crisis. No facility is located in the Special Flood Hazard Area (SFHA).

# Mitigation Measures

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters (FEMA). The policies adopted by Sanford work to achieve these objectives and prevent flood damage. This community profile analyzes mitigation policies including Future Land Use, Environmental Efforts, Stormwater Management, and Building Practices all identified through the city's Comprehensive Plan and Land Development Code.

### Future Land Use

An analysis of the Future Land Use Map by Flood Zone (non-submerged acres) for the City of Sanford is aggregated below. This analysis reflects the hazards that come with planning for growth in flood prone areas.

Table 5. 0.2 Percent Annual Chance Flood Hazard* by Future Land Use (FLU), 2020

**0.2% Annual chance by FLU**

| FLU Designation | area | Percentage of total acres |
|---|---|---|
| AIC | 68.79 | 6.38 |
| GC | 18.21 | 1.69 |
| HDR | 99.41 | 9.22 |
| I | 6.75 | 0.62 |
| LDRSF | 144.32 | 13.39 |
| MDR15 | 52.73 | 4.89 |
| NC | 4.82 | 0.44 |
| PRO | 11.42 | 1.05 |
| PSP | 29.83 | 2.76 |
| ROI | 21.11 | 1.95 |
| RP | 234.02 | 21.72 |
| SE | 50.54 | 4.69 |
| WDBD | 335.48 | 31.13 |

In Sanford, 31.13% of the total percentage of acreage for the 0.2 Percent Annual Chance Hazard of the 100-year flood is planned for the Waterfront Downtown Business District, mixed use district. The next largest future land use Resource Protection District at 21.72%. Low Density Residential districts are the third largest future use in this flood hazard area at 13.39%. Airport Industry & Commerce, another variation of a mixed- use district accounts for 6.38%.

Table 6. Flood Zone A by Future Land Use (FLU), 2020

**Flood Zone A by FLU**

| FLU Designation | area | Percentage of total acres |
|---|---|---|
| AIC | 1754.69 | 45.02 |
| GC | 162.76 | 4.17 |
| HDR | 104.82 | 2.68 |
| HI | 428.05 | 10.98 |
| LDRMH | 73.64 | 1.88 |
| LDRSF | 269.78 | 6.92 |
| MDR10 | 162.79 | 4.17 |
| MDR15 | 65.15 | 1.67 |
| NC | 28.61 | 0.73 |
| PRO | 69.87 | 1.79 |
| ROI | 3.12 | 0.08 |
| RP | 247.84 | 6.35 |
| WIC | 525.93 | 13.49 |

Airport Industry and Commerce accounts for 45.02% of the total future land use in Flood Zone A. West Side Industry and Commerce comprises 13.49% of the total future land use. The third largest planned future use in this flood hazard area is I-4 High Intensity, a variation of a mixed-use district accounts for 10.98% of the total make- up.

Table 7. Flood Zone AE by Future Land Use (FLU), 2020

**Flood Zone AE by FLU**

| FLU Designation | area | Percentage of total acres |
|---|---|---|
| AIC | 1850.67 | 39.45 |
| GC | 191.19 | 4.07 |
| HDR | 141.30 | 3.01 |
| HI | 62.71 | 1.33 |
| I | 36.37 | 0.77 |
| LDRMH | 73.64 | 1.56 |
| LDRSF | 390.71 | 8.32 |
| MDR10 | 90.13 | 1.92 |
| MDR15 | 218.91 | 4.66 |
| NC | 7.02 | 0.14 |
| PRO | 139.34 | 2.97 |
| PSP | 407.73 | 8.69 |
| ROI | 45.97 | 0.97 |
| RP | 698.17 | 14.88 |

| | | |
|---|---|---|
| SE | 37.09 | 0.79 |
| WDBD | 299.89 | 6.39 |

In Flood Zone AE Airport Industry and Commerce comprises 39.45% of the total future land use. The next largest future use is Resource Protection District with 14.48% of the total make-up. Low Density Residential Single Family is 8.32%.

Table 8. Flood Zone AH by Future Land Use (FLU), 2020

**Flood Zone AH by FLU**

| FLU Designation | area | Percentage of total acres |
|---|---|---|
| GC | 33.63 | 5.81 |
| HDR | 36.74 | 6.35 |
| LDRMH | 73.64 | 12.73 |
| LDRSF | 35.25 | 6.09 |
| MDR15 | 8.66 | 1.49 |
| PRO | 2.03 | 0.35 |
| PSP | 293.77 | 50.80 |
| ROI | 3.08 | 0.53 |
| RP | 91.39 | 15.80 |

Sanford's Flood Zone AH is predominately planned for Public Semi-Public at 50.80% of the total future acreage. The next largest future use is Resource Protection District at 15.80%. Low Density Residential Mobile Home comprises 12.73%.

Table 9. Flood Zone X by Future Land Use (FLU), 2020

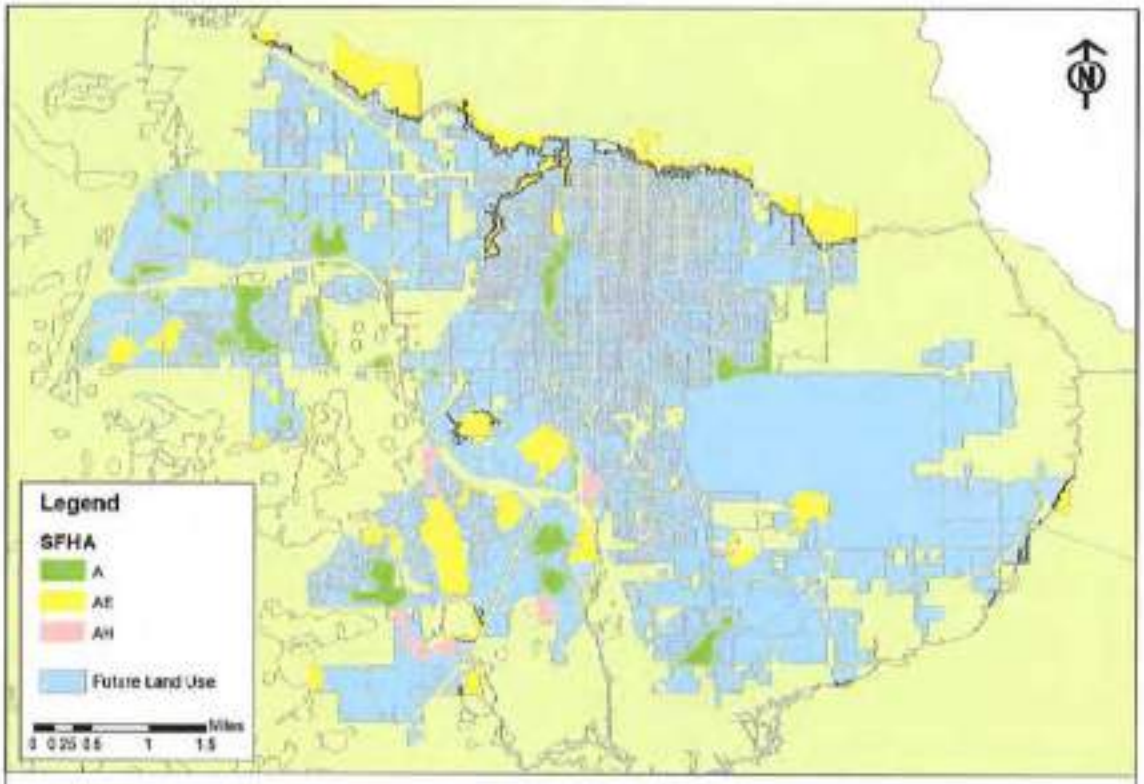
**Flood Zone X by FLU**

| FLU Designation | area | Percentage of total acres |
|---|---|---|
| AIC | 68.79 | 5.36 |
| GC | 29.38 | 2.28 |
| HDR | 99.41 | 7.74 |
| I | 6.75 | 0.52 |
| LDRSF | 144.32 | 11.24 |
| MDR10 | 132.76 | 10.34 |
| MDR15 | 52.73 | 4.10 |
| NC | 4.82 | 0.37 |
| PRO | 11.42 | 0.89 |
| PSP | 29.83 | 2.32 |
| ROI | 21.11 | 1.64 |

| | | |
|---|---|---|
| RP | 295.68 | 23.04 |
| SE | 50.54 | 3.93 |
| WDBD | 335.48 | 26.14 |

Waterfront Downtown Business Distrct comprises 26.14% of the total future land use in Flood Zone X. The next highest district is Reeource Protection at 23.04%. Low Density Residential- Single Family also makes up a significant percentage of this Flood Zone at 11.24%. Medium Density Residential comprises 10.34%

Figure 7. Future Land Use and Special Flood Hazard Areas (SFHA)




**City of Sanford Future Land Use and SFHA Map**

## Environmental Efforts

Environmental policies are a means to which a municipality values its natural heritage. Best practices in Floodplain Management mitigation include preserving natural areas located in floodplains or directing open space/ recreation uses towards them.

Sanford has committed itself to the protection of wetlands, aquatic habitats, floodways, and drainage ways. In only certain circumstances, minimal development is permitted if the reason is valid.

Under Section IV (Natural Resources) of the Compreshensive Plan the City of Sanford has laid out the Goals and Objectives to protect our environment for future generations. The City cooperates with the Florida Department of Environmental Protection and the City of Sanford is part of the St. Johns River Management District.

## Erosion and Sedimentation Control

The city's comprehensive plan sets objectives to protect minerals, soils and vegetation. These policies protect bodies of water and wetlands from siltation.

Section IV of the plan is dedicated to Natural Resources. Objective CON-1.5, Combat Soil Erosion, intends to reduce the incidence of soil erosion caused by development, breaches in shorelines and lands exposed for agricultural purposes. Policy CON-1.5.1 covers the implementation of Erosion and Sedimentation Controls as stipulated within the Land Development Regulations.

Figure 8. Wetlands

Wetlands from the St. Johns River that are protected from development.

Figure 9. Development along the St. Johns River

## Stormwater Management

Stormwater management practices are an essential component in mitigating flood damage. Policies enacted at the municipal level are essential in controlling stormwater run-off to create minimal damage impact on property.

The City of Sanford has many policies and objective to help with the management of stormwater. All of these provide guidelines on where and how many drainage systems are built.

Under Objective 4-5.1, there must be adequate stormwater management to allow for new development

Policy 4-5.1.2 states that stormwater drainage shall be addressed as watershed management and shall be coordinate plans and policies with the appropriate Public Agencies including local, State and Federal.

Policy 4-5.1.4 Addresses water quality and quantity concerns to protect the hydrological and ecological functions of water resources while permitting the most beneficial uses to occur.

Figure 10. Proper Stormwater Management

None of the stormwater has reached the property due to proper stormwater management practices.

## Building Practices

Building Practices are essential in mitigating flood damage to structures located in flood prone zones. There are different practices that help protect property and citizens.

Sanford uses the current Florida Building Code, with some modifications and higher standards. One of the higher standards dictates that the lowest floor level of any new structure, including the basement, shall be a minimum of 2-feet above the base flood elevation.

Before development can begin, permits must be submitted about the nature, location, dimensions, and elevations of the area under consideration for development.

A structure must be certified after placement of the lowest floor and proper floodproofing has been constructed. If they aren't certified or meet standards, all construction must cease.

Figure 11. Proper Building Practices

The correct way to prepare a property for development.

| | Responsible party | Deadline |
|---|---|---|
| | CITY OF SANFORD | Annual |

Goal 1: Engage in risk-based mitigation planning resulting in sustainable actions that reduce or eliminate risks to life and property from flooding.

Objective 1.1- Participate in Local Mitigation Strategy meetings and communicate concerns and issues.

Objective 1.2-Coordinate with the County and other local government agencies to develop and administer outreach programs to gain participation in mitigation programs by business, industry, institutions and community groups.

Goal 2: Enforce proper building and stormwater objectives and practices.

Objective 1.1- Continue training and review of building codes.

Objective 1.2- Perform ongoing maintenance of city streets, storm drains, street culverts, and storm water pond inlets and outfalls.

# Introduction

## Overview

The City of Winter Springs was incorporated in 1959 in Seminole County. It is in the central section of the county, with the City of Longwood to its west and the City of Oviedo to its east. Unincorporated Seminole County borders Winter Springs to the south and Lake Jesup is the northern boundary. Winter Springs covers 15 square miles. The city's population is 39,333 as of 2020.

Figure 1. City of Winter Springs

Source: Seminole County GIS

## Involvement with the National Flood Insurance Program (NFIP)

Winter Springs became eligible for the National Flood Insurance Program's (NFIP) Community Rating System (CRS) on October 1, 1993. The municipality ranked a class six(6) rating, receiving 2,000- 2,499 Credit Points (CT) during its classification and continues to maintain this designation as of 2020.

The discount percentage for those properties in the Special Flood Hazard Area (SFHA) is twenty (20%) percent while the percent discount for non-Special Flood Hazard Area (SFHA) is ten (10%) percent. The city's participation in the program is listed as current.

Figure 2. National Flood Insurance Program

NATIONAL FLOOD INSURANCE PROGRAM

# Risk Assessment

Communities must address four components when assessing risk. They are identifying hazards, profiling hazard events, inventorying assets, and estimating loss. This process measures the potential loss of life, personal injury, economic injury, and property damage resulting from natural hazards by assessing the vulnerability of people, buildings, and infrastructure to natural hazards. This section of the community profile assesses the potential of risk with respect to floodplain management in Winter Springs. There are six categories that address the four components identified in risk assessment as defined through the Federal Emergency Management Agency (FEMA): identifying flood zones within the city, surface water locations, property value within each flood zone, insurance statistics, vulnerable populations, and critical facilities.

Figure 3. Flood Zone, Percentage of Acreage for the City of Winter Springs, 2021, Non-Submerged

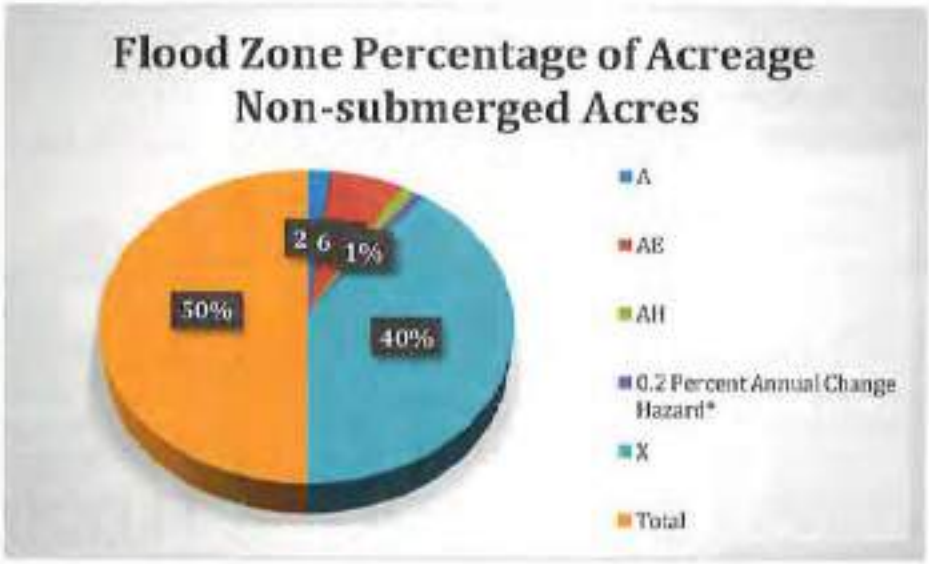
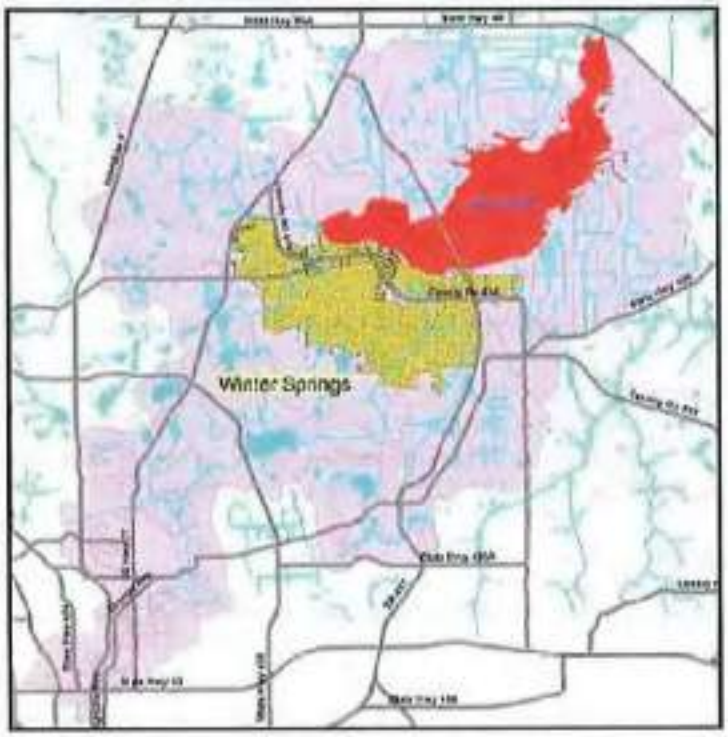



Figure 3 shows that the percentage of non-submerged acreage found in Winter Springs. 0.2 Percent Annual Chance Hazard of the 100-year flood accounts for 1.84% of the total percentage of non-submerged acreage. Non-submerged acreage refers to land not inundated by surface water. Flood Zone A comprises 4.02% of the total make-up. Flood Zone AE is 12.39% and Flood Zone AH is 2.59%. Flood Zone X accounts for 79.24% of the total percentage of non-submerged acres.

## Surface Water

Figure 4. Surface Water Runoff




The majority of the City's surface water runoff is into Lake Jesup and is conveyed by three of its main tributaries, Howell Creek, Gee Creek and Soldiers Creek.

Howell Creek runs through the central portion of the City and has an approximate 3750-acre tributary area, thirty eight percent (38%) in the City. Bear Creek, a tributary to Howell Creek, also runs through a portion of the City and converges with Howell Creek just north of Winter Springs Boulevard.

Gee Creek runs through the southwestern portion of the City and has an approximate 2,464-acre tributary in the area, twenty six (26%) percent of the City. No Name Creek is a tributary to Gee Creek and converges with Gee Creek just south of SR 434.

A very small portion of the City about nine (9%) percent is with the Soldiers Creek Basin, approximately 884 acres. The creek itself enters the City's limits near the SR 419 crossing before discharging into the western part of Lake Jesup.

The 100-year flood plains in the City are located along the creeks, along the shores of lakes and in some landlocked low spot areas.

## Property Value

Table 2. Total Appraised Value by Flood Zone, 2014

| Flood Zone | Total Appraised Value |
|---|---|
| 0.2 Pct. Annual Chance Flood Hazard* | $191,184,305.00 |
| Zone A | $85,792,173.00 |
| Zone AE | $368,088,713.00 |
| Zone AH | $1,609,778.00 |
| Zone X | $2,321,701,467.00 |
| **Grand Total** | $2,968,376,436.00 |

*of the 100 Year Flood

Source: Seminole County GIS Dept.

Winter Springs has over 2.9 billion dollars in appraised value that could be vulnerable to flood risk damage. The largest property value risk is found in Flood Zone X, 78%. Flood Zone AE accounts for the second largest appraised value that could be vulnerable to risk at 12%. The next most notable flood zone that has high-appraised value is A with over 85 million dollars in property. Those properties within the 0.2 Percent Annual Chance Hazard of the 100-year flood have over 191 million dollars of property risk.

## Insurance Policies

Table 3. Policy Statistics for the City of Winter Springs, as of 10/01/2025

| Policies in Force | Insurance in Force – Whole | Average Premium + Federal Policy |
|---|---|---|
| 645 | $105,670,000 | $813 |

Winter Springs has 645 insurance policies in force according to the Federal Emergency Management Agency. The total coverage amount for these insurance policies is $105,670,000 while the premium paid for them averaged $226,473.

Table 4. Loss Statistics for the City of Winter Springs, as of 10/01/2025

| Total Losses | Closed Losses | Open Losses | CWOP Losses | Total Payments |
|---|---|---|---|---|
| 106 | 106 | 0 | 4 | $205,078.94 |

Source: FEMA

Total property losses in Winter Springs are numbered at 106 properties since 1978. Losses that had been paid in full accounted for 78 claims and losses that had been closed without payment (CWOP) were totaled at 28 claims. There were no losses not paid in full. Total payments made to claimants since 1978 is valued at $4,607,173.

## Vulnerable Population

Vulnerable populations are those segments of the community who are considered to be most prone to risk in the time of hazard. Approximately eleven (11%) percent of the population is over the age of 65.

## Repetitive Loss Property

Repetitive Loss (RL) properties are defined as those properties that have been flooded on more than one occasion. Winter Springs currently has ten (10) repetitive loss properties and Community Rating System (CRS) Outreach Program letters of standard guidelines is sent annually to 22 properties in the RL areas.

In the event that properties do begin to meet that criteria, there are home buyout programs that can be initiated to purchase the property. These measures protect residents from harm and remove development from the floodplain (FEMA, 2019).

## Manufactured Homes

Figure 5. Manufactured Home Flood Hazard

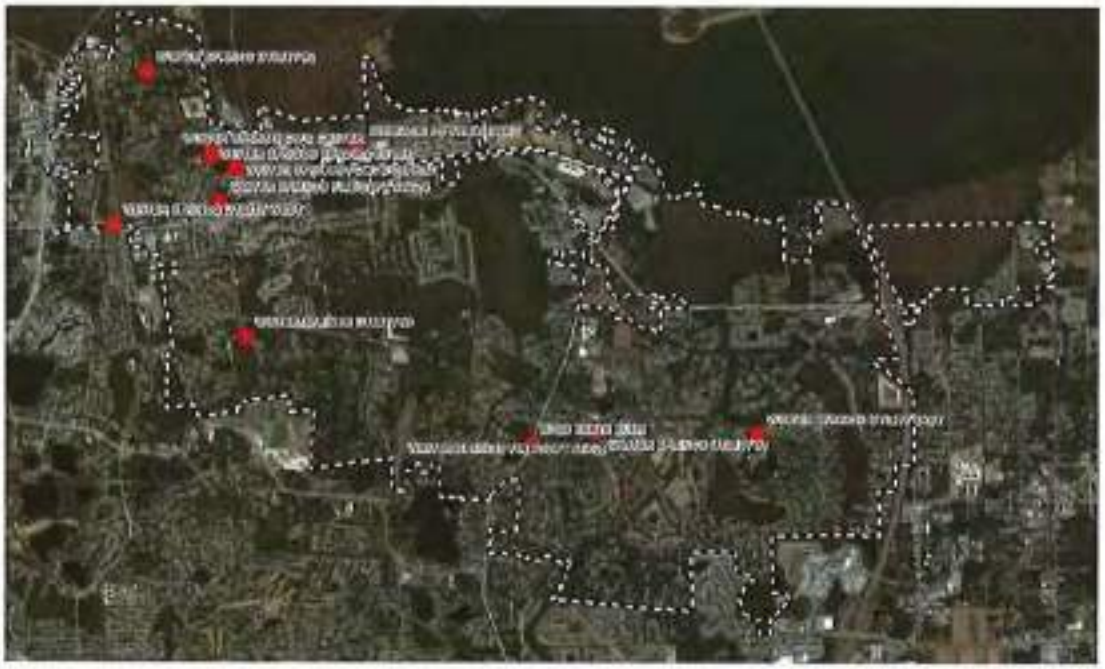
Manufactured home communities, such as the one showed above in Winter Springs are vulnerable populations susceptible to flood hazard without proper mitigation measures. Manufactured homes are symbolized as red points.

Winter Springs has one (1) manufactured home communities located in its jurisdiction that could be vulnerable to flood inundation. Figure 6 illustrates the potential risk. The City's Land Development Code set standards for these forms of residences. Mitigation policies that help protect flood damage to manufactured homes include setting the elevation above the base flood level and must be anchored. The foundation must be anchored in order to prevent flotation or any varying form of movement.

## Critical Facilities

Critical facilities are defined as those locations that provide a critical function and should be protected from flood damage. Seminole County has identified nineteen (19) critical facilities throughout Winter Springs and the emergency services they provide in times of crisis. None of the facilities is located in the Special Flood Hazard Area (SFHA). Name of the facilities and addresses are provided below.

Figure 7. Location of Critical Facilities



Source: Seminole County GIS

**Critical Facilities:**

| # | NAME | ADDRESS | FLOOD ZONE |
|---|---|---|---|
| 1 | Winter Springs Water Treatment Plant (WTP) # 2 (West) | 700 SHEOAH BLVD, WINTER SPRINGS, 32708 | X |
| 2 | Winter Springs Wastewater Treatment Plant (WWTP, West) | 1000 W SR 434, WINTER SPRINGS, 32708 | X |
| 3 | Winter Springs Civic Center | 400 N EDGEMON AVE, WINTER SPRINGS, 32708 | X |
| 4 | Winter Springs Senior Center | 400 N EDGEMON AVE, WINTER SPRINGS, 32708 | X |

| | | | |
|---|---|---|---|
| 5 | Winter Springs Fire Department Station # 24 | 102 N MOSS RD, WINTER SPRINGS, 32708 | X |
| 6 | Winter Springs Public Safety Complex | 300 N MOSS RD, WINTER SPRINGS, 32708 | X |
| 7 | Winter Springs Water Treatment Plant (WTP) # 3 | 110 W BAHAMA RD, WINTER SPRINGS, 32708 | X |
| 8 | Seminole County Public Schools Transportation Service Station | 822 E State Rd 434, Winter Springs, | X |
| 9 | Keeth Elementary School | 425 TUSKAWILLA RD, WINTER SPRINGS, 32708 | X |
| 10 | Winter Springs Fire Department Station # 26 | 850 NORTHERN WAY, WINTER SPRINGS, 32708 | X |
| 11 | Winter Springs Water Treatment Plant (WTP) # 1 | 851 NORTHERN WAY, WINTER SPRINGS, 32708 | X |
| 12 | Winter Springs Wastewater Treatment Plant (WWTP) East | 1560 WINTER SPRINGS BLVD, WINTER SPRINGS, 32708 | X |
| 13 | Winter Springs City Hall | 1126 E SR 434, WINTER SPRINGS, 32708 | X |
| 14 | Highlands Elementary School | 1600 SHEPARD RD, WINTER SPRINGS, 32708 | X |
| 15 | Layer Elementary School | 4201 SR 419, WINTER SPRINGS, 32708 | X |
| 17 | Winter Springs Elementary School | 701 W SR 434, WINTER SPRINGS, 32708 | X |
| 18 | Winter Springs High School | 130 TUSKAWILLA RD, WINTER SPRINGS, 32708 | X |
| 19 | Indian Trails Middle School | 415 TUSKAWILLA RD, WINTER SPRINGS, 32708 | X |

# Mitigation Measures

Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters. The policies adopted by Winter Springs work to achieve these objectives and prevent flood damage. This community profile analyzes mitigation policies including Future Land Use, Environmental Efforts, Stormwater Management, and Building Practices all identified through the city's Comprehensive Plan and Land Development Code.

## Future Land Use

An analysis of the Future Land Use Map by Flood Zone (non-submerged acres) for the City of Winter Springs is aggregated below. This analysis reflects the hazards that come with planning for growth in flood prone areas.

Table 6. 0.2 Percent Annual Chance Flood Hazard* by Future Land Use (FLU), 2021

| Flood Zone by Future Land Use | Acres | Percentage |
|---|---|---|
| **0.2 Pct Annual Chance Flood Hazard*** | | **1.84%** |
| Low Density Residential | 66.15 | 45.85% |
| Conservation | 21.42 | 14.85% |
| Rural Residential | 11.96 | 8.29% |
| Medium Density Residential | 9.91 | 6.87% |
| Recreation | 8.74 | 6.06% |
| Town Center District | 8.45 | 5.86% |
| Public / Semi-Public | 6.78 | 4.70% |
| Greenway Interchange District | 5.01 | 3.47% |
| Industrial | 2.33 | 1.62% |
| High Density Residential | 2.09 | 1.45% |
| Commercial | 0.79 | 0.55% |
| Mixed-Use | 0.64 | 0.44% |
| **Total** | 144.27 | 100.00% |

**of the 100 Year Flood*

In Winter Springs, 45.85% of the total percentage of acreage for the 0.2 Percent Annual Chance Hazard of the 100-year flood is planned for Low Density Residential. The second largest planned use is Conservation at 14.85%. The next largest future land use in this flood hazard area is Rural Residential at 8.29%. Medium Residential and Recreation comprise 6.87% and 6.06%. Town Center District, which is a variation of a mixed- use district, is 5.86% of the total make up.

Table 6. Flood Zone A by Future Land Use (FLU), 2021

| Flood Zone by Future Land Use | Acres | Percentage |
|---|---|---|
| **Flood Zone A** | | **4.02%** |
| Low Density Residential | 101.62 | 32.35% |
| Rural Residential | 76.42 | 24.33% |
| Recreation | 70.47 | 22.44% |
| Conservation | 52.36 | 16.67% |
| Medium Density Residential | 6.57 | 2.09% |
| Public / Semi Publis | 4.63 | 1.47% |
| High Density Residential | 2.01 | 0.64% |
| **Total** | 314.08 | 100.00% |

Low Density Residential accounts for 32.35% of the total percentage of acreage in Flood Zone A. The next largest future planned use is Rural Residential at 24.33%. Recreation and Conservation account for 22.44% and 16.67%. Medium Density Residential comprises 2.09% and Public/Semi-Public is planned for 1.47% of the total percentage of acreage.

Table 7. Flood Zone AE by Future Land Use (FLU), 2021

| Flood Zone by Future Land Use | Acres | Percentage |
|---|---|---|
| **Flood Zone AE** | | **12.39%** |
| Conservation | 534.58 | 55.17% |
| Low Density Residential | 140.91 | 14.54% |
| Towne Center | 86.9 | 8.97% |
| Greenway Interchange District | 78.62 | 8.11% |
| Recreation | 37.29 | 3.85% |
| Rural Residential | 27.03 | 2.79% |
| Medium Density Residential | 20.52 | 2.12% |
| High Density Residential | 12.58 | 1.30% |
| Industrial | 11.01 | 1.14% |
| Commercial | 10.44 | 1.08% |
| Public / Semi-Public | 4.96 | 0.51% |
| Mixed-Use | 4.12 | 0.43% |
| **Total** | 968.96 | 100.00% |

In Flood Zone AE Conservation is designated for 55.17% of the total percentage of acres of future land use. The next largest future is Low Density Residential at 14.54%. Town Center District and Greenway Interchange District comprise 8.97% and 8.11%. Recreation accounts for 3.85% of the total future use in this flood prone area.

Table 8. Flood Zone AH by Future Land Use (FLU), 2021

| Flood Zone by Future Land Use | Acres | Percentage |
|---|---|---|
| Flood Zone AH | | 2.51% |
| Conservation | 192.34 | 97.96% |
| Medium Density Residential | 3.08 | 1.57% |
| Low Density Residential | 0.71 | 0.36% |
| Rural Residential | 0.22 | 0.11% |
| **Total** | 196.35 | 100.00% |

Conservation accounts for 97.96% of the total future land use in Flood Zone AH. Medium Density comprises 1.57%.

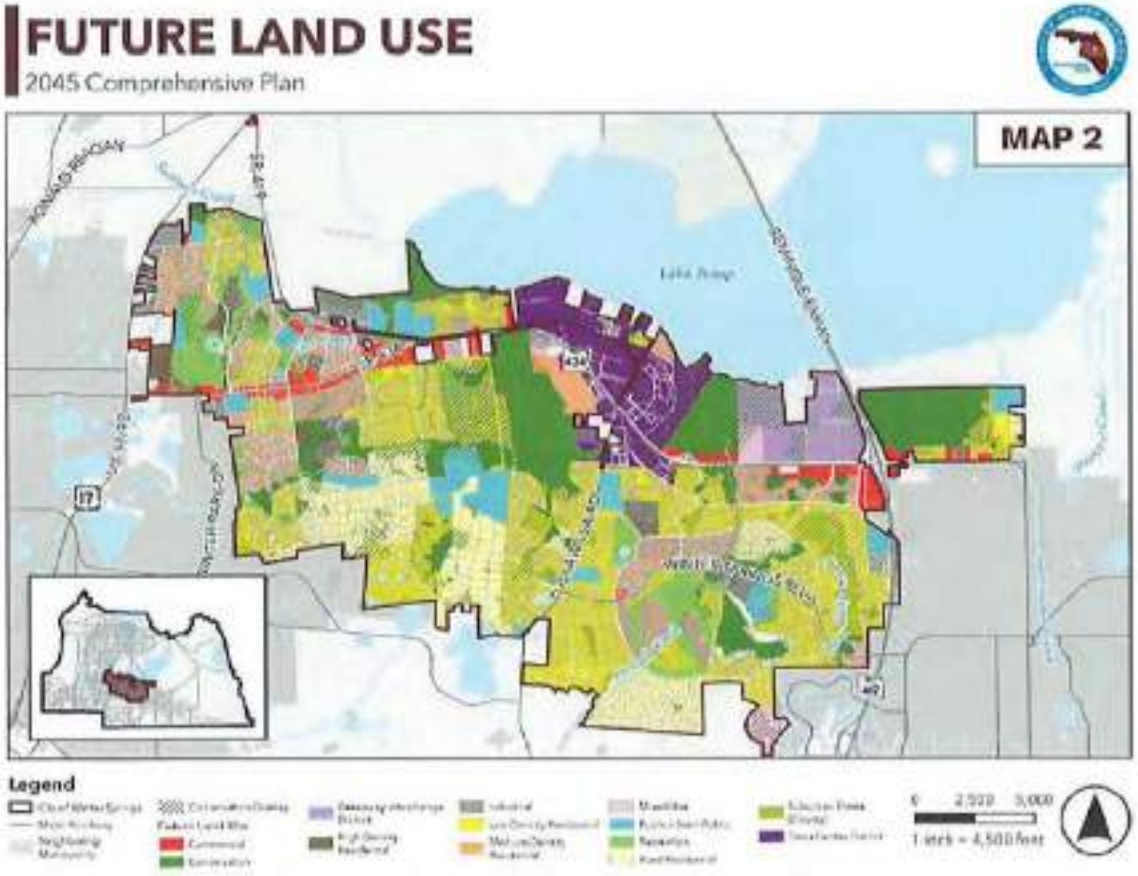
Table 9. Flood Zone X by Future Land Use (FLU), 2021

| Flood Zone by Future Land Use | Acres | Percentage |
|---|---|---|
| Flood Zone X | | **79.24%** |
| Low Denisty Residential | 2380.9 | 38.45% |
| Medium Density Residential | 892.72 | 14.42% |
| Rural Residential | 768.98 | 12.42% |
| Town Center District | 373.56 | 6.03% |
| Commercial | 317.38 | 5.13% |
| Recreation | 323.53 | 5.23% |
| Greenway Interchange District | 289.25 | 4.67% |
| Public / Semi-Public | 269.54 | 4.35% |
| Conservation | 243.38 | 3.93% |
| High Desnity Residential | 177.34 | 2.86% |
| Industrial | 35.96 | 0.58% |
| Mixed Use | 119.2 | 1.93% |
| **Total** | 6191.74 | 100.00% |

The largest future planned use in Flood Zone X is Low Density Residential at 38.45% of the total make- up. Medium Density Residential accounts for 14.42% and Rural Residential is 12.42%. Public/ Semi Public comprises 4.35% of the total make- up. Recreation accounts for 5.23% of the future planned use in this flood zone.

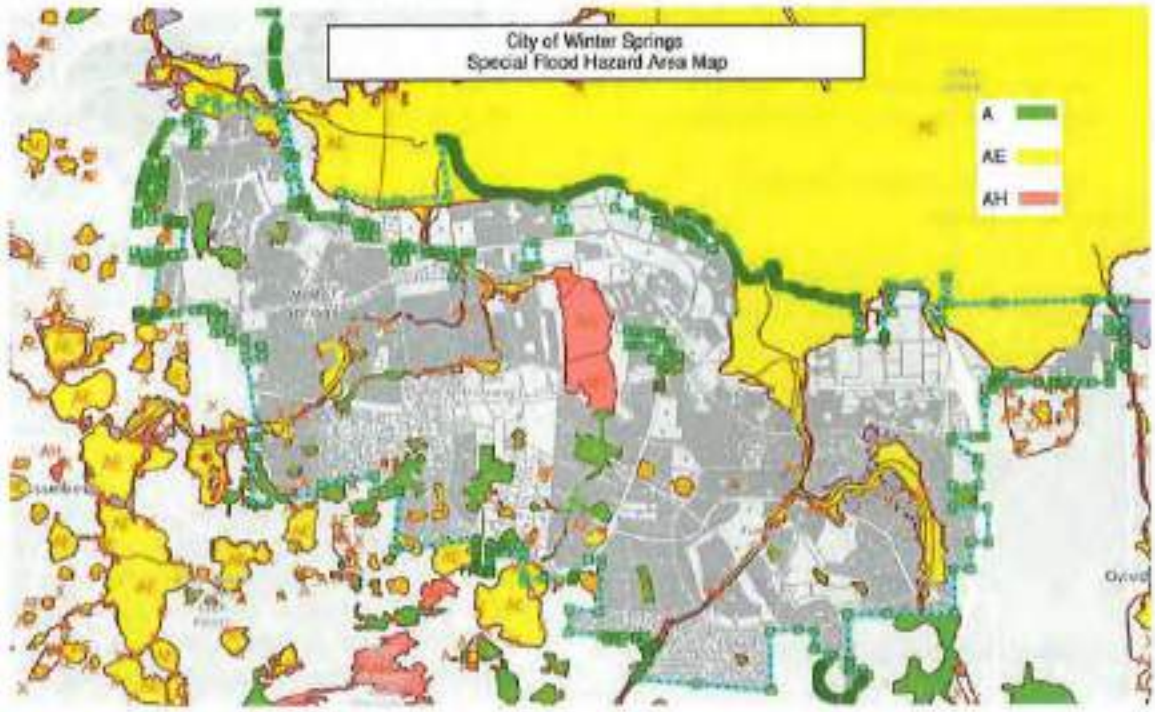
Figure 6. Future Land Use and Special Flood Hazard Areas (SFHA)


Figure 6a. Future Land Use



Winter Springs COMM plan

Figure 6b. FEMA Flood Zone Map - Special Flood Hazard Areas (SFHA)




## Environmental Efforts

Environmental policies are a means to which a municipality values its natural heritage. Best practices in Floodplain Management mitigation include preserving natural areas located in floodplains or directing open space/ recreation uses towards them.

In recent years, development in areas of Lake Jesup, wetlands, and the 100-year flood plain have become much stricter. Figure 8 shows where these areas that is in the Conservation Overlay. Conservation Overlay in regards to the Future Land Use Map- 2030. Even though this map exists, it does not prohibit development in these areas, rather point out sensitive areas. If these areas are deemed not sensitive, development may be allowed.

In Winter Springs, most of the wetlands are found near Lake Jesup. These wetlands are considered palustrine which consist of wet prairie, hydric hammocks and hardwood swamps, bayhead, and areas of cypress. These areas are being protected because they are in the floodzone and create a natural mitigation against floods.

## Erosion and Sedimentation Control

The City's Comprehensive Plan sets objectives to protect minerals, soils and vegetation. These policies protect bodies of water and wetlands from siltation. The regulations for water quality, erosion and sedimentation control for both the city

and state regulatory agencies are enforced during the development review process and the implementation of the capital improvements, private new developments and re-developments.

Figure 7. Conservation Overlay


Conservation Overlay in Winter Springs.

Figure 8. Soil Map

In Winter Springs, development is impacted by the type of soil present. This is determined by how well they drain and how much load they can bear. Figure 9 shows the areas where soil is approved for development by the Soil Conservation Service.

The two main soil types in Winter Springs are Urban Land-Tavares-Millhopper and Urban Land-Astatula-Apopka. Both of these soils are known for being well drained.

## Stormwater Management

Stormwater management practices are an essential component in mitigating flood damage. Policies enacted at the municipal level are essential in controlling stormwater run- off to create minimal damage impact on property.

There are 177 stormwater retention ponds in Winter Springs.

In Winter Springs, there are many policies that help with stormwater management.

Policy 1.2.8 states that stormwater management codes in the Code of Ordinances must set the standards for onsite stormwater systems and ways to lessen the amount of untreated run- off into the city's lakes.

Policy 1.2.9 is the Stormwater Master Plan. This policy states development is not allowed unless it abides to the Stormwater Master Plan.

Policy 1.10.1 is the Public Utility System Land Requirements. This policy states that proposed development in relation to the existing utility and land needs systems must be adequate. Stormwater management falls in this category.

Figure 9. The Soils

On the left is the Urban Land-Tavares-Millhopper Soil and the right is the Urban Land-Astatula-Apopka Soil.

## Building Practices

Building Practices are essential in mitigating flood damage to structures located in flood prone zones. There are different practices that help protect property and citizens.

Policy 1.2.7 requires all new construction or substantial improvement and damage repair must fall into the standards of the National Flood Insurance Program (NFIP).

The lowest floor of a structure must be eighteen inches above the Base Flood Elevation (BFE) established in the 100-year plain. The Florida Building Code mandates the BFE plus one foot free board requirement.

The City Code of Ordinances states many codes that help prevent flood damage. If any structure is within a flood zone, the City's CFM representative conducts a thorough assessment of the property and location.

In December 31, 2023, Winter Springs adopted the 2023 Florida Building Codes, 8th edition, Chapter 16.

The City's Building Department maintains a BCEGS Class 4/4 rating.

## Goal 1 – City's Floodplain Management Implementation Activities (Annual Basis)

*Objective 1.1 – Continue to maintain the City's CRS Class 6*

The City continues to implement the steps and procedures required to maintain the City's Class 6 designation. This is an ongoing item that will continue throughout the duration of the certification. City will continue to review, monitor, and inspect all developments within flood-prone areas to ensure compliance with FEMA requirements and achieve satisfactory floodplain management outcomes. This will benefit City's residents by continuing to spread awareness about Special Flood Hazard Areas and providing cost savings through insurance discounts. The only cost associated with this objective is the time that staff spent coordinating with FEMA.

*Objective 1.2 – Continue to provide accessible flood protection information and public outreach*

The City continues to provide flood protection information and resources to current and prospective residents and business owners. Information is available at City Hall, the City's website, and by contacting the City's CRS coordinator. This is an ongoing item that will continue throughout the duration of the certification. The City will modify the availability of these items as current accessibility requirements adapt. The costs associated with this objective are minimal and only require staff time and coordination.

*Objective 1.3 – Continue to preserve open space areas*

The City of Winter Springs defines open space and conservation areas within the City's Future Land Use Maps, Recreation and Open Space Element and Conservation Element of the City's Comprehensive Plan. The City continues to preserve these areas to the greatest extent possible during planning and land development review. The City reviews these areas on a regular basis and the costs associated are minimal to the City.

*Objective 1.4 – Continue to enforce flood management provisions*

The City enforces flood management provisions through permit and land development review. The City's flood management provisions are more restrictive than the current FEMA minimums, which has likely resulted in a lessen impact to structures within Special Flood Hazard Areas. Our goal is to minimize recurring flood damages to properties within the floodplain and to encourage the adoption of higher development standards in flood-affected areas.
The cost associated with this objective is minimal to the City and is part of standard permit review.

*Objective 1.5 – Continue to provide the inspection and maintenance of the drainage infrastructure and system*

The City performs routine inspections and maintenance activities on all publicly owned infrastructure as part of the City's National Pollutant Discharge Elimination System Municipal Separate Storm Sewer System permit. This includes periodic inspections and maintenance of critical City outfalls, pipes, inlets, and weirs to ensure efficient drainage conveyance for stormwater and flood flows. This is an ongoing item and the City typically exceeds the State minimums for inspections. Not including staff wages, the City typically spends about $250,000 between maintenance and capital improvements on the drainage infrastructure and system.

**Goal 2 – Work in conjunction with the county, the cities and other local governments to create and support floodplain management throughout the county**

*Objective 2.1 – Participate in the countywide Floodplain Management Plan and associated Floodplain Management Team working group*

The City continues to work with the county, surrounding cities and FEMA in a collaborative effort to support floodplain management in Seminole County and its associated cities. This is an ongoing item that has minimal costs to the City.

*Objective 2.2 – Coordinate with the County and other local government agencies to develop and administer outreach programs by business, industry, institutions, and community groups.*

The City continues to work with the County and local agencies to participate in the various outreach programs led by the County. This is an ongoing item with minimal costs to the City.